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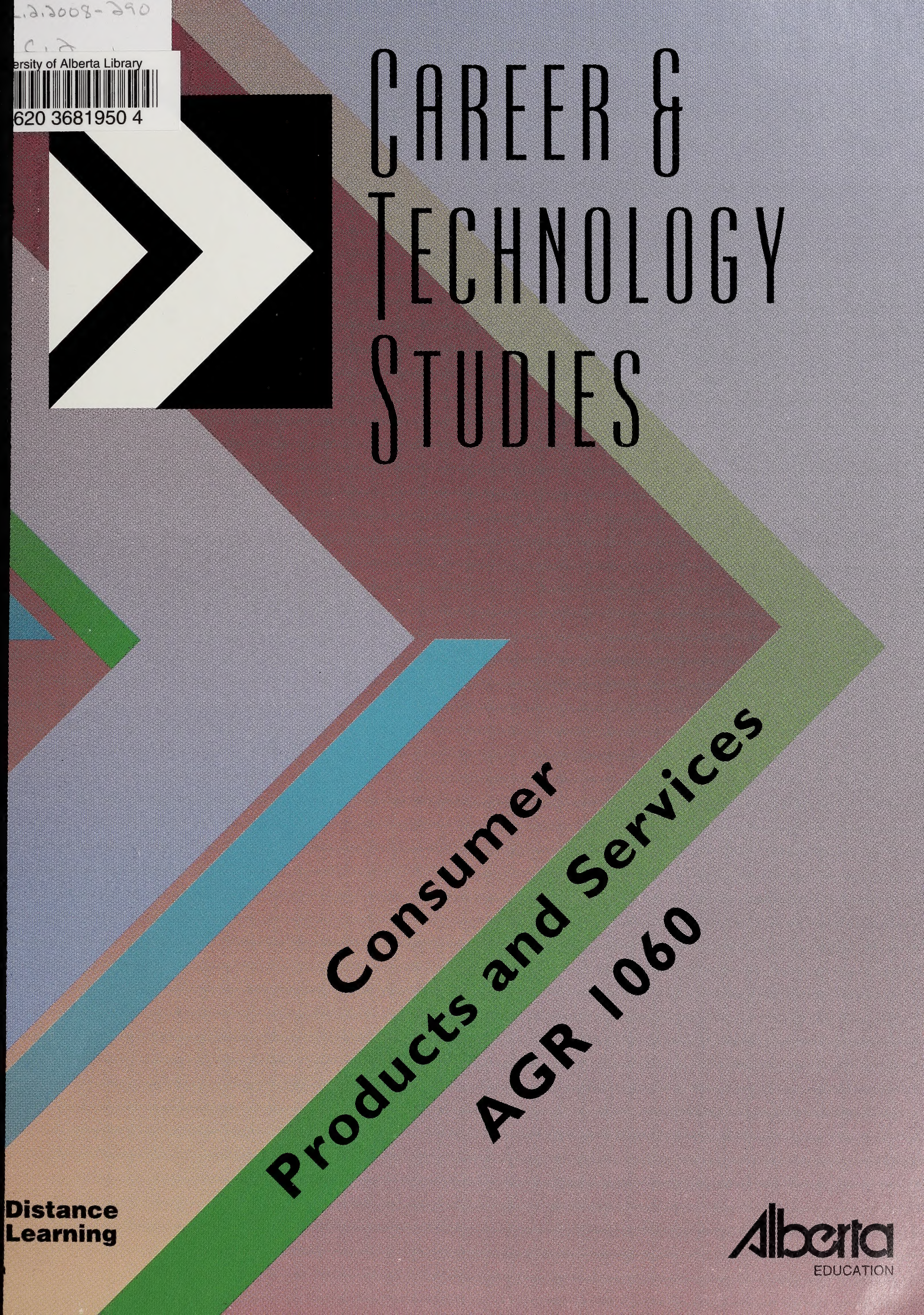

CAREER & TECHNOLOGY STUDIES

Consumer Products and Services

AGR 1060

Distance Learning

Alberta
EDUCATION

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Consumer Products and Services

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Agriculture 1060
Consumer Products and Services
Student Module Booklet
Learning Technologies Branch
ISBN 0-7741-1354-5

This document is intended for	
Students	✓
Teachers	✓
Administrators	
Parents	
General Public	
Other	

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http://ednet.edc.gov.ab.ca/ltb

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Welcome!

Welcome to AGR 1060.

We hope you'll enjoy your study of
Consumer Products and Services.

CTS Strands were designed to stand alone or be integrated with other strands for a customized course of studies to meet student needs. Through each strand, CTS basic competencies (knowledge, skills, and attitudes) will be identified as follows:

Careers: identify appropriate career linkages within the strand being studied

Communication: effectively present concise written, visual, and oral communications

Ethics: make judgements about whether behaviour is right or wrong on personal, community, and global levels

Innovation: recognize opportunities/problems and identify and suggest new ideas

Safety: assess potential risks, and follow personal and environmental safety procedures

Task Management: demonstrate an ability to locate and use resources and to use time effectively

Teamwork: work towards goals co-operatively, collaboratively, or independently and acknowledge the opinions of others

Technology: effectively use technology when required

These basic competencies build daily living skills useful in a broad range of future endeavours and careers.

The eight icons that appear here indicate to students and facilitators that a basic competency has been identified in the activity offered to the students. Not all of the icons appear in each module.

Resources

- a notebook or binder in which to respond to questions asked in this Student Module Booklet
- a VCR
- the following videotapes:
  - *Inside a Meat Processing Plant* (optional)
  - *Careers in Agriculture* (optional)
- your local library

Note that you may be required as part of this course to do outside research and to meet with business people in your community.

Visual Cues

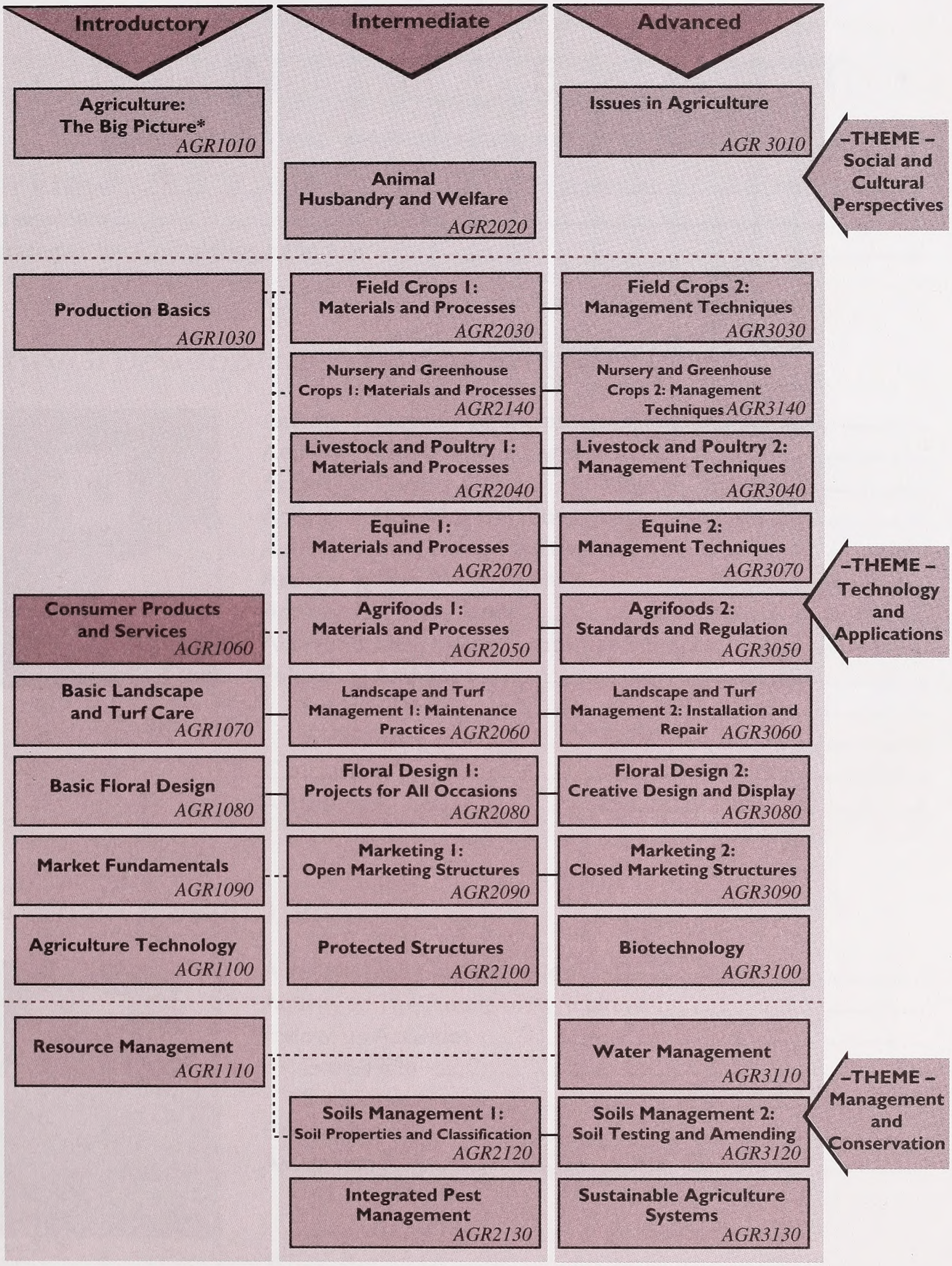
In addition to the Career and Technology Studies basic competencies icons described earlier, you may find visual cues throughout the Student Module Booklet to assist you in your studies. Read the following explanations to discover what each icon prompts you to do.

View a videocassette.

Access the Internet if you have that capability.

Agriculture

O·V·E·R·V·I·E·W



Introductory	Intermediate	Advanced	
Agriculture: The Big Picture* AGR1010		Issues in Agriculture AGR 3010	–THEME – Social and Cultural Perspectives
	Animal Husbandry and Welfare AGR2020		
Production Basics AGR1030	Field Crops 1: Materials and Processes AGR2030	Field Crops 2: Management Techniques AGR3030	–THEME – Technology and Applications
	Nursery and Greenhouse Crops 1: Materials and Processes AGR2140	Nursery and Greenhouse Crops 2: Management Techniques AGR3140	
	Livestock and Poultry 1: Materials and Processes AGR2040	Livestock and Poultry 2: Management Techniques AGR3040	
	Equine 1: Materials and Processes AGR2070	Equine 2: Management Techniques AGR3070	
Consumer Products and Services AGR1060	Agrifoods 1: Materials and Processes AGR2050	Agrifoods 2: Standards and Regulation AGR3050	
Basic Landscape and Turf Care AGR1070	Landscape and Turf Management 1: Maintenance Practices AGR2060	Landscape and Turf Management 2: Installation and Repair AGR3060	
Basic Floral Design AGR1080	Floral Design 1: Projects for All Occasions AGR2080	Floral Design 2: Creative Design and Display AGR3080	
Market Fundamentals AGR1090	Marketing 1: Open Marketing Structures AGR2090	Marketing 2: Closed Marketing Structures AGR3090	
Agriculture Technology AGR1100	Protected Structures AGR2100	Biotechnology AGR3100	
Resource Management AGR1110		Water Management AGR3110	–THEME – Management and Conservation
	Soils Management 1: Soil Properties and Classification AGR2120	Soils Management 2: Soil Testing and Amending AGR3120	
	Integrated Pest Management AGR2130	Sustainable Agriculture Systems AGR3130	

— Prerequisite --- Recommended sequence

* Module provides a strong foundation for further learning in this strand

June 1997

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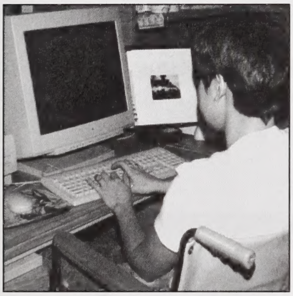

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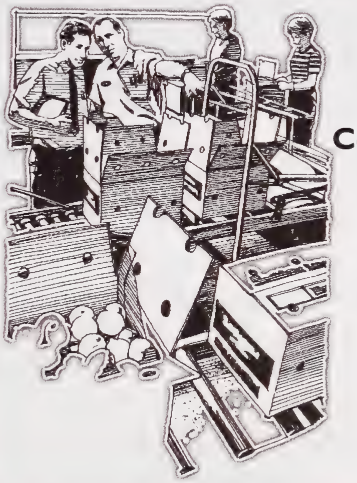
Consumer Products and Services

OVERVIEW

Think of something you purchased recently. It might have been something costly, like a leather jacket or a stereo system. Or perhaps it was something relatively inexpensive, such as a tube of toothpaste or a chocolate bar.

Who do you think came up with the idea for that object? Can you imagine what that person had to do to make that product available to you?

In this module you will look at how products like the one you purchased are brought into existence and, in particular, how agricultural products are developed. You will also look at possible occupations in producing agricultural goods. You will probably be surprised at how many career opportunities are open to you in this area.



AGR 1060

Consumer Products and Services

Section 1: Developing Products and Services

Section 2: Career Clusters

Assessment

The document you are presently reading is called a Student Module Booklet. It will show you, step by step, what to do and how to do it.

This module, Consumer Products and Services, is worth one credit. The module is comprised of two sections. Within each section, your work is grouped into activities. Within the activities, there are readings, explanations, and questions for you to work through. You will correct these activities yourself using the Appendix at the end of this module. These suggested answers will provide you with immediate feedback on your progress.

A portion of your grade in this module will be based on the assignments that you complete for assessment. There is one assignment after each section. The mark distribution is as follows:

Section 1 Assignment	**75 marks**
Section 2 Assignment	**25 marks**
TOTAL	**100 marks**

The CTS modules are competency based, which means that you must successfully complete each section to receive credit for the module.

In addition, you might also be required to complete a final test. The weighting for this final test will be determined by your teacher.

Strategies for Completing a Module

Organize your materials and work area before you begin: Student Module Booklet, notebook, pens, pencils, and so on. Make sure you have a quiet area in which to work, away from distractions.

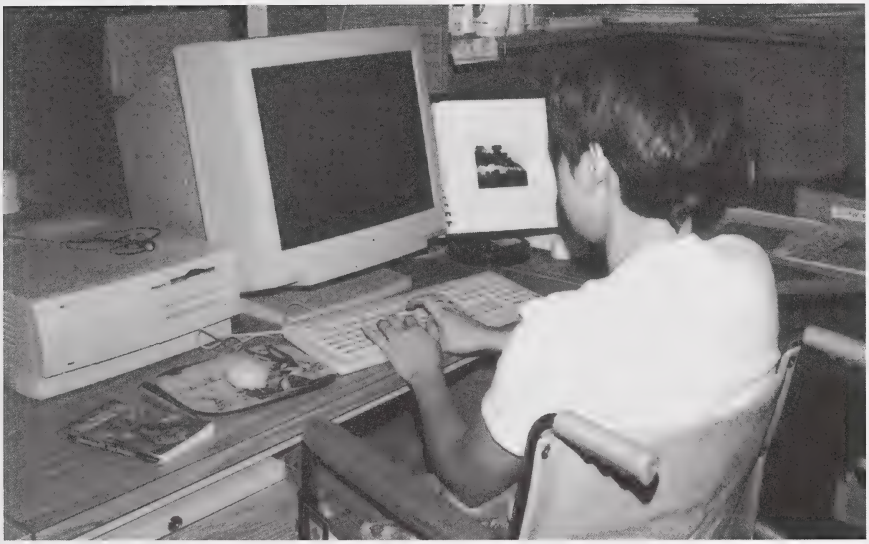
Because response lines are not provided in the Student Module Booklet, you'll need a notebook or lined paper to respond to questions and complete charts. It's important to keep your lined paper handy as you work through the material and to keep your responses together in a notebook or binder for review purposes later.

To achieve success in this module, be sure to read all of the instructions carefully and work slowly and systematically through the material. Remember, it's the work you do in this Student Module Booklet that will prepare you for your assignments. Try to set realistic goals for yourself each day; and when you've set them, stick to them. Do your assignments regularly, and don't forget to review your work before handing it in. Careful work habits will greatly increase your chances for success in Agriculture.

Good luck!

SECTION 1

Developing Products and Services



Do you have your own computer? If you don't and you're thinking of buying one, how are you planning to shop for it?

In order to make a wise choice, you need to identify your goals (what do you want your computer to do?). Then, do some research to investigate what's available.

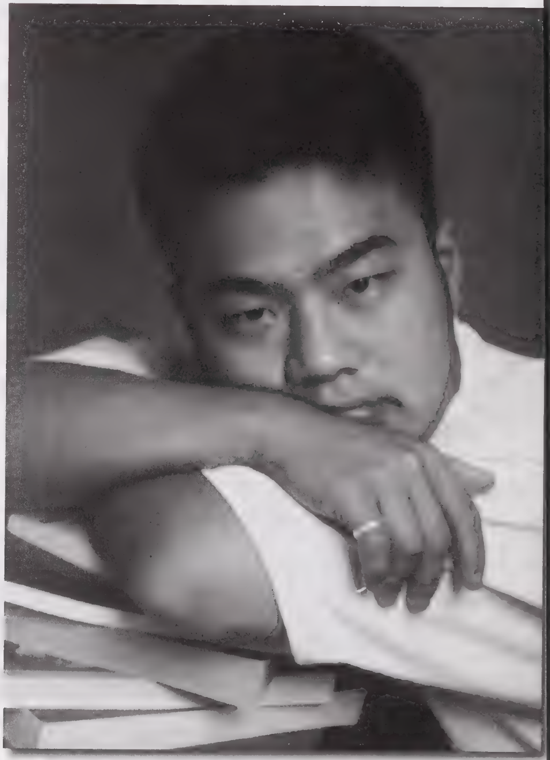
Entrepreneurs use a similar method when deciding on how to develop a consumer product or service.

Once they have a clear idea of what they are going to do, they implement their plans and then monitor the project's progress.

In this section you will look more closely at the steps taken by entrepreneurs to develop products. In addition, you will become aware of government legislation concerning products; strategies used to ensure product quality and consumer safety; distributing and marketing processes; buildings and equipment needed to manufacture consumer products; and business management practices.

ACTIVITY 1

Developing a Consumer Product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Have you ever dreamed of inventing a product that the whole world would rush to buy? Or, have you ever invented a product or modified an existing product? Did you consider manufacturing the product? If you did have a product, how would you make it available to **consumers**?

▼

consumers: *people who buy or use products*

▲

Whether you are part of a small, home-based business or a large manufacturer, there are certain steps you need to take in order to develop a consumer product. These steps include

- formulating the idea
- planning the venture
- meeting safety standards
- implementing the plan
- evaluating the project

Formulating the Idea

Good products start with good ideas. Most good commercial ideas come from observing people and the products they buy. For example, a few years ago someone noticed many consumers were demanding a healthy snack food, but stores were not supplying it. Consequently, the granola bar entered the market and became a popular snack food.

Have you ever had someone compliment you on something you cooked? Well, your recipe may become as popular as Colonel Harland Sanders'. People came to his small restaurant in Corbin, Kentucky, USA, because they really enjoyed his fried chicken with its coating of 11 different herbs and spices. Today, you can get Kentucky Fried Chicken all over the world.

Some good ideas come about through research and experimentation. The Canadian Cold Buster bar (now called the Access bar) is an example of this. Dr. Larry Wang developed the idea for this sports nutrition/energy bar while doing research on body fat utilization at the University of Alberta. The natural ingredients in the bar release energy stored in body fat. Eating one bar can provide you with enough energy to do two to three hours of vigorous exercise.

In each case, the new product was developed after someone used the knowledge gained through observation. In the case of the granola bar, someone observed something was lacking in the market place. In the case of Kentucky Fried Chicken, Colonel Sanders observed how people reacted to his recipe. In the case of the Access bar, Dr. Wang observed the results of clinical experiments.

Note: *A good place to find help, if you do have a good idea and you are serious about putting it to work, is the Food Processing Development Centre located in Leduc, Alberta. There is more information about this centre in the Enrichment of this section.*

Having a good idea, however, is only part of the process of developing a consumer product. It takes a concerted effort to move a good idea from a conceptual stage to a production stage.

Preparing the Plan

▼

business plan: *planning tool used to get a clearer vision of a proposed business venture*

▲

The better prepared you are, the more likely you are to succeed. When starting a business of any type, it is important to have a clear vision of what is going to happen. To help you gain a clear vision, you should prepare a **business plan**. A business plan is a written description of your potential business. Look at the following outline to discover what comprises a business plan.

Business Plan

Business Purpose

The business purpose should include the following:

- a mission statement
  - the business name
  - customer needs your company fills
  - individuals or businesses you serve now or want to serve
  - how you plan to serve your customers: e.g., products or services
  - a definition of the business you are in

- your business goals which should be
  - specific
  - measurable
  - attainable
  - realistic
  - time-targeted

Marketing Plan

Items to include in your marketing plan include the following:

- estimated sales
- sales area covered
- sales staff required
- training programs
- customer relations
- delivery equipment and methods
- delivery schedules
- company image
- advertising campaigns

Operating Plan

The operating plan includes the following:

- inputs needed and possible sources
- a description of the location of your business
- plant and equipment requirements
- management and staffing
- distribution of products and/or services
- processing techniques and flow chart of processes
- safety-, quality-, and environmental-control systems

Financial Plan

Your financial plan should include the following:

- start-up costs (new businessess) or expansion costs (ongoing businesses)
- desired financing (short-term and long-term)
- a profit and loss (income) statement that includes a gross profit and net profit
- a cashflow projection
- a balance sheet showing what the business owes and owns
- a break-even analysis based on a combination of fixed costs and variable costs
- a list of collateral

Business Purpose

In the business purpose section of the business plan, identify what it is you want to do—state your business's goals and objectives. In this section, indicate what the name of the business will be and why that name should be chosen for your business. Identify your potential customers and explain why your product will meet those customers' needs. Try to identify your business's limitations and opportunities as well.

Marketing Plan

advertising: *paid announcements informing consumers about products or services*

In the marketing plan, delve into things like company image, **advertising** campaigns, sales staff, and sales point locations. Other things covered here include credit policies, delivery methods, and sales facilities. Also, identify competitors' strengths and weaknesses.

Market surveys are usually done during this part of the planning process. To conduct a market survey, ask potential customers to use prototypes of your product and then ask them to comment on those products. Feedback from potential customers gives some weight to things like acceptable pricing ranges and projected sales figures. It may even lead to product modifications if consumers voice complaints or make suggestions for improvements.

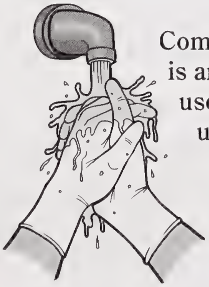
Operating Plan

In the operating plan, describe how the business will get the job done. Explain how your products will be processed, stored, and distributed. Describe where the physical plant is to be located, what equipment will be needed, and what staffing will be required.

inputs: *components of production like raw materials, energy, land, and labour*

commodities: *products of agricultural production; e.g., wheat*

When deciding on where to locate your processing plant, keep in mind two things: **inputs** and markets. To reduce shipping charges, you should locate your processing plant as close as possible to both. The ideal spot is a place surrounded by potential customers that provides easy access to inputs like raw **commodities**, fresh water, labour, and energy.



Commodities are the building materials for consumer goods. Water is an important input even if it is not a product ingredient. Water is used to clean commodities, machines, and buildings. It is often used to heat buildings and may be used in the processing of products. Most manufacturing plants could not operate without water.

A good supply of labour is needed, too. Well-trained, skilled staff are needed to operate and maintain machines. Staff is also needed in other areas, like planning and scheduling production lines.

Energy is needed in modern manufacturing plants. Most new technologies requir electrical energy to function; therefore, a good stable supply of relatively cheap energy is a big factor in operating a successful business.

1. Describe the need for a fresh water supply in a processing plant.
2. Why is it necessary to return water to the environment in a clean state?
3. Why is it important to locate a processing plant near a supply of raw commodities?

Ethics

Compare your answers with those in the Appendix, Section 1: Activity 1.

Financial Plan

capital: *money and goods brought together to produce other goods*

collateral: *property pledged by a borrower to protect the interests of the lender*

In the financial plan, explore monetary aspects of your business. Topics covered include start-up costs, possible **capital** sources, **collateral** offered for loans, and financial forecasts. Start-up costs are expenses related specifically to the process o beginning your business; e.g., fees paid to register the company with the government.

There are two possible sources of start-up capital: business owners and lenders. T obtain money from lenders, businesses usually have to assign assets of equal or greater value to the money borrowed. The assigned assets are referred to as collateral. If businesses are unable to repay their loans, lenders seize the collateral sell the assigned assets, take the money owed them and, if any money is left, return the remainder to the businesses.

Financial forecasts are presented in the form of cashflow projections, income statements, and balance sheets. Cashflow projections show, on a monthly basis, how money flows in and out of a business over a year. Many manufacturing plants go through cycles. They have periods of high manufacturing activity followed by periods of low activity.

During periods of high manufacturing activity, businesses are preparing for periods of high sales. However, no money comes into the business until products are actually sold. Therefore, there is a net outflow of cash during the periods of high manufacturing. During periods of peak sales and low production, more cash flows into the business than flows out.

Managers use information given in cashflow projections to plan how to manage their cash assets. The cashflow projections show them when they need cash and allow them to plan ahead to finance those needs. It also shows them when to expect excess cash and how long that cash may be invested before it must be withdrawn to use in the business again.

profit: *the excess of revenues over expenses*

Income statements summarize incomes and expenses over a period of time. If incomes are expected to exceed expenses, then businesses will have a **profit**. If it is the other way around, businesses can expect a net loss. Preparing income statements is another way to look at how businesses are expected to do. Some managers like to prepare statements based on different scenarios—one very pessimistic, another as close as possible to what is likely to happen, and a final forecast based on a very optimistic outlook. Doing this gives managers a better idea of the risks and opportunities faced by their enterprises.

Balance sheets provide a summary of the assets used in a business. It also provides a breakdown of the ownership of those assets between lenders and owners. Preparing balance sheets based on projected results helps managers see changes in asset values and changes in ownership of those assets over time.

4. Match the following statements to the section of a business plan they fit best.

   - business purpose
   - marketing plan
   - operating plan
   - financial plan

   a. The company image to maintain is one of high quality, dependability, and convenience.

   b. The product is a tasty, nutritious, convenient potato salad.

   c. Production equipment includes an Enox 500 potato peeler, a Silvan vertical steam cooker, a Roto-rotor 250 lb. tub mixer, a Filman XXI Century packaging machine, and a walk-in cooler.

   d. Five Mercedes 14-foot cube vans fitted with GEE-5451 refrigeration units will be used to deliver salads.

   e. The name of the business will be Simple Foods Inc. and the name of the products will be Peter Rabbit Salads—the first product being Peter Rabbit Potato Salad.

f. Production machinery will be leased from Coverall Foods & Machines Ltd for $25 000 per year; delivery equipment will be leased from Uncle Harry's Van Sales for $25 000 per year; office equipment will be leased from Signature Office Supplies for $25 000 per year; land and buildings will be leased from OPAR Real Estate for $31 000 per year.

g. Potato salad will be made from scratch using the best possible ingredients available. Potatoes will be washed, peeled, cooked, sliced, and mixed with a secret recipe of dressings, herbs, and spices.

h. Sales will be conducted through retail outlets. Five sales people will be hired to develop sales contracts and maintain accounts.

i. Capital for the start-up and operation of the business will be obtained from the owners ($150 000) and the local Capital Savings and Trust ($50 000).

j. Potential customers include professional people too busy to make their own salads and elderly retired people who find it more convenient to buy prepared salads rather than shop for the ingredients.

k. The processing plant will be located in Grande Prairie, which is close to a good supply of commodities, transportation routes, a growing market of people, and a well-trained labour pool.

l. Advertising for the business will be handled by Bert and Co. Retail sales will be promoted using giveaways, demonstrations, free sample packages, and reduced prices. Radio, television, newspapers, and fliers will be used to present the product to the public.

m. The production staff will include eight technicians, one food scientist, and one supervisor. The office staff will include one plant manager, one secretary/accounting clerk, and one accountant.

n. The collateral for the bank loan will be a $100 000 bond posted by the owners and held in trust by Xan and Yui Lawyers and Solicitors.

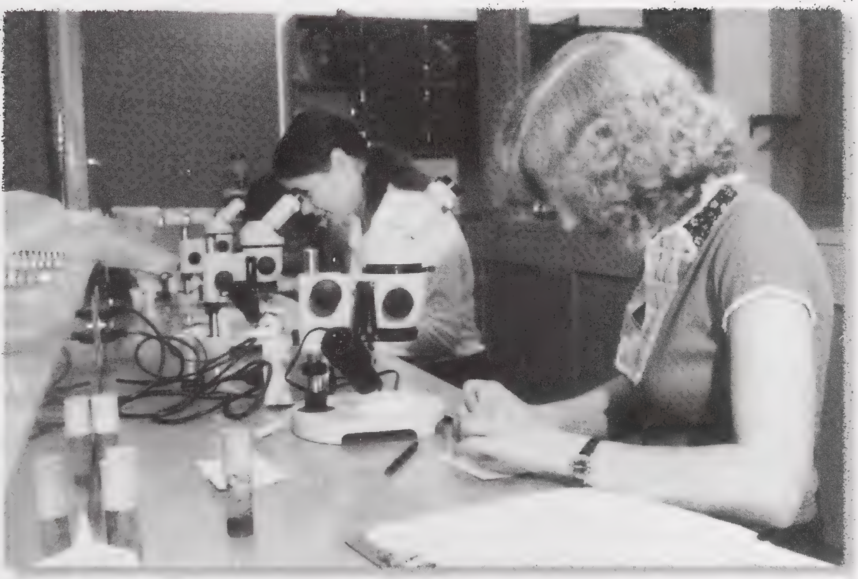
o. A market survey conducted by Singh and Associates concluded there is enough demand for prepared salads in the Grande Prairie region to warran the investment in a production plant. The market survey included a test of the actual product and there was unanimous approval of the product by the target group.

p. One of the business's goals is to sell $1 million worth of product in the first year—that translates into 286 000/0.450-kg packages.

q. It is estimated that the start-up costs for legal, accounting, and engineering fees will be $7000.

Compare your answers with those in the Appendix, Section 1: Activity 1.

Meeting Safety Standards



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consumer roducts: *rocessed goods hat are ready for se by people*

There are two safety components you should strive to meet when thinking of developing **consumer products**: safe production and safe usage. Safe production means that your manufacturing process does not harm the environment nor does it endanger your work force. Safe usage means that consumers can eat or use your product with no ill effects to themselves or the environment.

The first step towards meeting these objectives is to become fully aware of all laws and regulations regarding manufacturing conditions, employee working conditions, and product standards. Laws and regulations provide guidance on these matters.

When it comes to agricultural goods, one of the most important regulatory bodies in Canada is Health Canada. This federal agency evaluates and sets standards for all foods consumed or traded in Canada. It tests food products and inspects facilities that make food products. Health Canada inspectors have the power to close down any operation they feel endangers the environment, the labour force making the product, or those who consume the product.

Innovation

5. Why is it important to have safety- and environmental-control measures in place?

Compare your answer with the one in the Appendix, Section 1: Activity 1.

Implementing the Plan

There are two stages in implementing a business plan: the test stage and the full-scale operation stage. The test stage gives you a chance to walk through your proposed system. The business plan may provide you with a mental test of your idea, but there is nothing like actually going through the process to prepare you for full-scale production.

During the test period, run a scaled-down version of the real project and solve problems that arise. Possible problems may include the following:

- unavailability of raw materials
- lack of qualified personnel to staff the business
- equipment failure
- disrupted production processes
- difficulty marketing the **finished goods**
- difficulty distributing finished products
- difficulty maintaining high-quality outputs

finished goods: *consumer products that are ready for market*

Once you have ironed out all the problems in your test stage, you can swing into full-scale operation.

Evaluation

You will want to know how things are progressing at each step of the way. Therefore, it is important to keep accurate records right from the start. As the manufacturing plant is being built, you will want to know whether the costs are coming close to your capital budget figures. During the test stage, you will want to know whether the estimated production costs and revenues are close to your operating budgets. Once you are into full-scale production, you will determine whether the plant is operating in a profitable manner.

An important question to have answered is whether your venture was worth your time and money. You will be relieved if the figures indicate a vibrant business venture. However, if the figures show a struggling, weak enterprise you will have to make some changes to save your floundering business.

Accurate, up-to-date records are needed to judge the past performance of a business—whether it performed as expected and whether it made or lost money. Good records are also necessary for preparing business reports that describe a business's current position: the value of the assets it controls and a breakdown of who owns those assets. This information helps business managers identify their business's strengths and weaknesses and plan future activities that will improve the chances of success.

Accurate, up-to-date records are also needed to file government reports such as annual income tax returns. Failure to file government reports can result in fines and other penalties.

6. Why would it be important to have accurate, up-to-date records?

Communication

7. Prepare a flow chart identifying all the steps in developing and producing a consumer product.

Compare your answers with those in the Appendix, Section 1: Activity 1.

You should now be able to describe the steps you would go through to produce a consumer product. In addition, you should be able to identify and explain the four parts of a business plan.

In the next activity you will learn about product standards, labelling, and grading. Each is an important part of Canada's agricultural processing system.

ACTIVITY 2

Government Legislation

Standards

Think of the first time you made cookies. You probably used a recipe from a cookbook and followed the directions closely. Can you imagine how your first batch of cookies would have turned out without some directions?

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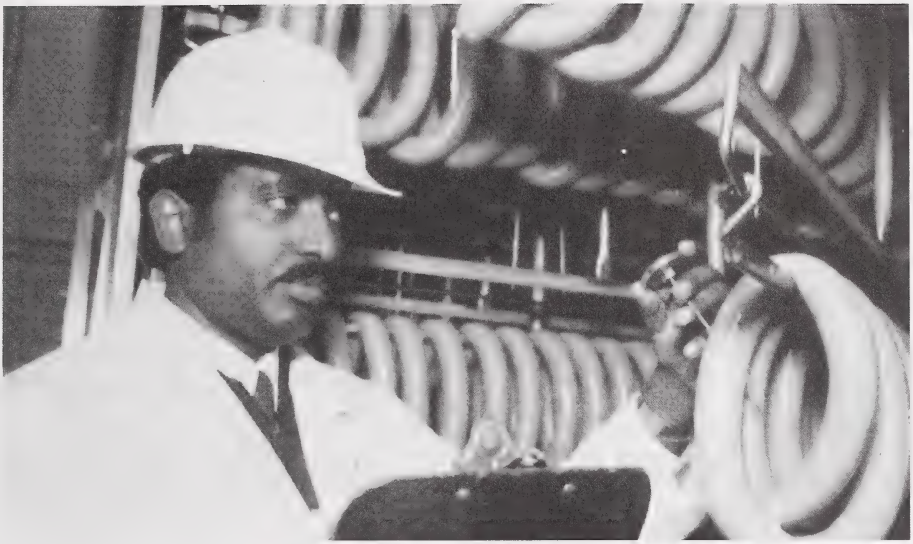
In a way, government rules and regulations are like directions in a cookbook. They guide people who are setting up a business. Government regulations cover things like how a product is to be made, what it should do, and how it should be marketed.

What effect do government standards and regulations have on your life? For one thing, they give you consistency. You know that if you buy certified durum wheat seeds, you are getting durum wheat seeds that are relatively free of unwanted materials and that the seeds will have good germinating characteristics. You know that if you buy a candy bar, you can read the label to find out what materials went into making that product. You know that when you go into a grocery store and purchase a dozen Grade A large eggs, you are getting the highest quality large eggs possible.

You may take this type of consistency for granted, but it is highly prized by other nations. Canada has a world-wide reputation for producing safe, high-quality foods. This reputation makes it easy for Canada to export nearly a quarter of its total food production each year. The reason for that reputation is that Canada maintains tight control over its agricultural industry with laws and a strict enforcement policy. All agricultural products sold in Canada or traded to other nations must be tested and meet the minimum requirements set out in government regulations.

Who is responsible for setting standards and regulations? As you learned in Activity 1, one of the primary groups setting standards is the federal government's Health Canada department. Health Canada evaluates and sets standards for all food items produced in Canada or imported into Canada from other countries.


NASA

1. Assume you are a Health Canada inspector and you are about to inspect a small meat-processing operation. What things would you be looking for during the inspection?

Agriculture and Agrifood Canada is another important federal agency. It is responsible for evaluating and setting standards for agricultural commodities. Agriculture and Agrifood Canada look after goods like animal feeds, seeds, and fertilizers. They inspect registered establishments, domestic commodities, and imported commodities. They are also responsible for animal and plant disease control.

Remember the Mad Cow Disease that devastated the British beef industry in the early 1990s? Agriculture and Agrifood Canada is largely responsible for keeping that disease out of Canada. Using their records of live animal imports, they were able to track down and destroy all animals that came into Canada from Great Britain. Fortunately, there were only a few animals involved.

If you are interested in learning more about Canada's food system and you have access to the Internet, research Health Canada. One site you will want to visit is Health Canada located at the following URL:

http://www.hwc.ca/

Remember, though, that Internet addresses are subject to change.

Another important organization that sets safety standards in Canada is the Canadian Standards Association (CSA). This government-controlled agency is responsible for monitoring non-food consumer products. It sets standards for product safety and performance. You probably recognize their logo "CSA Approved." It appears on nearly every piece of equipment sold in Canada.

patent: *a document issued to inventors giving them exclusive rights to make, use, or sell their inventions*

If you invented a better meat grinder, you would have to send a working model to the Canadian Standards Association (CSA) for their evaluation and approval before you could market it. You would also apply for a **patent** at the federal government's patent office to make sure no one could copy your invention.

If your product is new, the Canadian Standards Association will design a test for its application and provide you with standards that your new product must meet. Products are usually tested by a team consisting of representatives from the manufacturer, the testing laboratory, industry consultants, and consumers.

Safety STOP

2. Imagine you are testing the design of a new food dehydrator. Which standards would be important for this product to meet?

3. List six items in your home that have been approved for use by the Canadian Standards Association (CSA).

Compare your answers with those in the Appendix, Section 1: Activity 2.

Labelling

Have you ever taken a big gulp of milk only to find that it was sour? The memory isn't pleasant, is it? Thanks to labelling this does not happen often. Producers stamp an expiry date on food **packages** to let you know when food items are too old to consume.

packages: *containers surrounding a consumer good*

Labelling is an important part of government regulations, especially for people who have food allergies. For example, if you suffer severe allergic reactions to peanuts, you know how important it is for producers to list all ingredients on their product packages. It could mean the difference between life and death.

One piece of government legislation covering labels is the Consumer Packaging Act. The chart that follows summarizes what must appear on labels according to the act.

Label Requirements	
Label Requirements for Food Products	**Label Requirements for Non-Food Products**
• the common name of the product • the net quantity of the product in metric units • a list of ingredients (listed in descending order of proportion in the product) • the name and address of the company producing the product • the information in both French and English	• the identity of the product • the quantity of the product in metric units • the name and address of the manufacturer or distributor • the information in both French and English

4. Check the labels on three food items. Do the labels contain all the information required by law? Now, check the labels on three non-food items. Do they meet the labelling law requirements?

Two other important pieces of legislation concerning labels are the federal Pest Control Products Act and the Alberta Agricultural Chemicals Act. These deal with labelling on hazardous materials like **pesticides**. According to law, labels on hazardous materials must give the following information.

esticides: *hemicals used to ill weeds or sect pests*

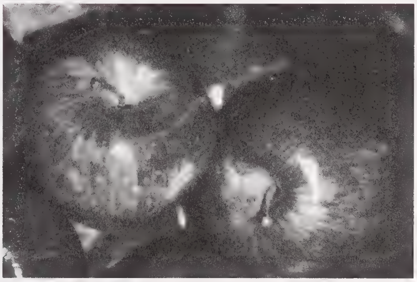
Information on Pesticide Container Labels

- a **classification** section stating the environment where the product can be used: restricted, commercial, agricultural, industrial, or domestic
- a **guarantee** section stating the concentration of the active ingredient
- a **poison symbol** indicating the toxicity of the product, e.g., very poisonous, moderately poisonous, or slightly poisonous
- a **precaution** section describing the hazards due to toxicity and precautions that should be taken to avoid harm to the environment or the applicator
- a **first aid** section giving instructions on how to treat a person in case of accidental poisoning
- a **toxicological** section (on all but low-toxicity products) describing symptoms of poisoning
- a **disposal** section describing how to dispose of used containers and left-over chemicals
- a **directions** *for use* section describing how the product is to be used

5. Suggest five reasons for standardizing information that goes on labels and packages.

Compare your answers with those in the Appendix, Section 1: Activity 2.

Grading



You know you cannot compare apples to oranges, but what about comparing apples to apples? How can you tell the difference between two apples? Is one better than the other or are they the same? This is where product grading becomes important. Food products are graded on characteristics such as quality, size, condition, texture, and appearance to help you determine the difference between similar products.

Food products are usually graded using letters or numbers. The first letter or number is usually the highest grade possible. For example, a Grade A large egg is the best quality large egg there is. Likewise, Number 1 spring wheat is the highest quality spring wheat possible.

Next time you go to a grocery store, see if you can detect the difference between Grade A product and a Grade B product. In most cases the difference is noticeabl with the naked eye. An easy example is chicken. Compare a Grade A chicken wit a utility grade (Grade B) chicken. Both chickens are good quality and safe to eat, but the Grade A chicken has no blemishes, or other noticeable flaws. A utility chicken, on the other hand, will have some noticeable flaw like a missing limb, a scar, or a skin blemish. The grading system makes you aware of the difference between similar items and identifies which is the higher quality product.

Commodities are also graded. For example, Number 1 Canadian Western Red Spring Wheat is suitable for human consumption. It can be used to make bread. Canada Feed wheat, however, is only suitable for livestock feed. The difference between the two grades of wheat takes into consideration things like how many weed seeds are present and the amount of spoiled seeds in a batch of kernels.

6. Suppose you were asked to set up a rating system for grading chocolate chip cookies.

   a. What criteria would you use to compare cookies?
   b. How would you determine and identify each level or grade of cookie?

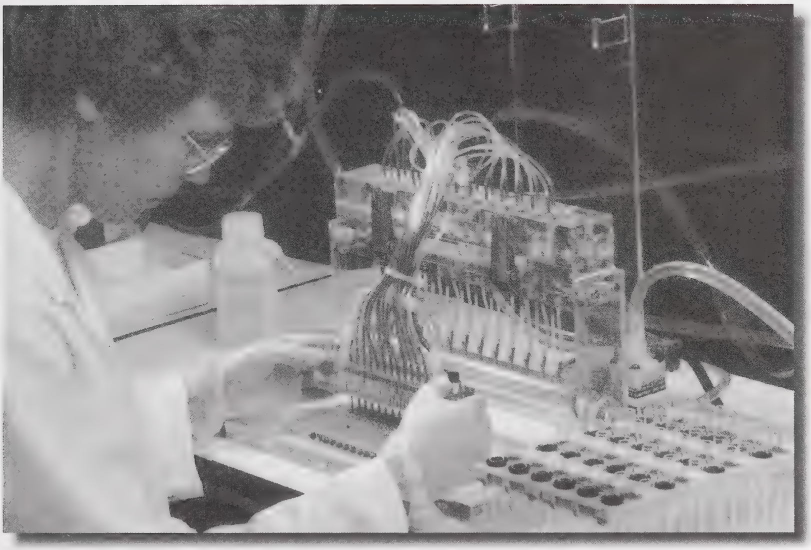
Compare your answer with the one in the Appendix, Section 1: Activity 2.

This activity introduced you to legislation covering product standards, labelling, and grading. After completing this activity, you should be able to discuss the need for product standards, and who is responsible for setting product standards. You should be able to name one piece of legislation that applies to an agricultural product, and you should be able to identify what must be put on food and non-foo labels. Finally, you should be able to discuss food grading systems and give one example of a food that is graded.

PHOTO SEARCH LTD

ACTIVITY 3

Quality Control of Products



Have you ever deliberately sought out and purchased the worst possible product available? It's not likely that you have. Consumers usually look for the best possible product at a reasonable price.

If you were manufacturing an agricultural product, how would you make sure your product was of the best possible quality? If you addressed the problem like most plant managers, you would institute a **quality-control program**. You would likely hire a team of experts to write procedures, set standards, and monitor your manufacturing process.

▼
uality-control rogram: *a set f activities esigned to nsure adequate uality of finished roducts*
▲

1. What do you think would be some of the consequences if a food-processing plant did not have a quality-control program?

Start with a Good Design

The first step towards producing a high-quality product is a good design. Getting a good **design** takes intuition and experimentation. You have to make sure that your product does what it is supposed to do, that it is safe to use, that it lasts a reasonable length of time, and that it is liked by consumers.

▼
esign: *reliminary ketch or plan*
▲

Most large organizations have long-term research programs that try to utilize the latest technologies to improve production processes or product characteristics.

Use the Best Inputs

Another important step in creating a high-quality, finished product is obtaining the best possible inputs. You have probably heard the expression, “Garbage in = Garbage out,” when discussing computer data—it applies to making consumer products, too. By using the best possible raw materials, labour, and machinery to make a product, you improve the chances of producing a high-quality product. However, if you use poor inputs you can expect poor outputs.

Take bread making for example. What would happen if you purchased Canada Feed wheat instead of Number 1 Canadian Western Red Spring wheat to make bread flour? For one thing your bread would turn out heavy and flat because Canada Feed wheat contains less gluten than Number 1 bread wheat. Gluten is the elastic substance needed to make light bread.

Another thing you could expect is that your bread would contain a few pebbles an some dirt because Canada Feed wheat is not as clean as Number 1 bread wheat. I some loaves you might find spoiled, foul-tasting sections because Canada Feed wheat has more spoiled seeds in it than Number 1 bread wheat. Using a lower-quality raw material will give you a low-quality product.

Skimping on other inputs can lead to manufacturing problems, too. For example, i you hired an inexperienced worker and did not train that person in the proper use of a complicated machine, you could expect spoiled products, slower operating speeds, and possible machine damage. If you purchased a poor-quality processing machine, you could expect more downtime, poor-quality outputs, spoiled goods, o high maintenance costs.

Be Consistent

uniformity: *sameness*

Another aspect of high-quality products is **uniformity**. Products are more appealing to consumers when they have consistent characteristics such as taste, size, shape, weight, colour, and texture. If you bought salt and vinegar chips regularly, wouldn’t you expect each bag of salt and vinegar chips to have similar characteristics? You probably wouldn’t buy a brand of chips if you could not rely o the manufacturer to supply you with the same tasting chips, bag after bag.

Monitor the Process

Many things can happen during processing that can affect your finished product. When dealing with goods, especially food products, it is important to monitor each processing stage. Conditions like storage temperatures, the presence of harmful organisms, and product age need to be watched closely. Tests conducted in order to monitor the process might consist of taking samples and analysing them in a laboratory; checking storage and processing temperatures; checking on the cleanliness of the processing plant and storage facilities; and checking that workers are following appropriate procedures.

iable: *capable f growing or eveloping*

Quality control plays an important part in keeping processing plants **viable**. In a free market economy with a great deal of competition, customers will not buy poor-quality products. Producers who sell poor-quality products soon go out of business. Even one bad batch of products could turn enough customers away to cause a business to fail. Therefore, it is important that quality be maintained throughout a product's useful life.

2. Name two high-quality items you have purchased. Then give three features for each product that you believe make it a high-quality product.

3. Why is product design important to producing a high-quality product?

Innovation

4. Having a quality-control program can be expensive. What reasons can you give to make the expense of a quality-control program worthwhile?

Compare your answers with those in the Appendix, Section 1: Activity 3.

You should now be aware that the secret to producing a high-quality product is to follow an effective control program.

- Start with a good product design.
- Use the best raw materials.
- Be consistent.
- Monitor the process.

In the next activity you will find out how to get your high-quality product to the consumer.

ACTIVITY 4

Reaching the Consumer

Have you seen the movie “Field of Dreams”? In this movie the main character hears a voice that says, “If you build it, they will come.” He builds a baseball diamond in the middle of a cornfield, and people come from far and wide to see hi baseball field.

Drawing people to a product may be that simple in Hollywood, but in the real worl getting people to purchase a product is more difficult. Marketing takes considerable time and effort. In this activity you will look at several parts of the marketing process.

Advertising

Advertising is a part of the marketing process. Think of the products you usually buy. How did you learn about those products? If you are like most people, you buy products that are familiar to you, but how did they become familiar? In some cases you may have learned about a product because a friend told you about it, or you may have learned about it from watching a television commercial. That is what advertising is all about—telling people about products.

One of the goals of advertising, whether it is through word of mouth or by television commercial, is to create a demand for the product being advertised. Besides informing people that a product exists, advertisers also try to convince people to buy the advertised product.

Convincing people to buy a product may be as straightforward as pointing out the product’s good qualities, or it may be more subtle, like having some celebrity endorse the product. Some manufacturers try to **differentiate** their product from their competitor’s products by using comparative advertisements. By getting consumers to pick out, or differentiate, their product from other similar products, advertisers hope to foster brand loyalty.

▼

differentiate: *recognize differences between things*

▲

Consumers can be quite dedicated once they identify themselves with a particular brand. To see how deep brand loyalty runs, ask a room full of people which brand of cola pop is the best.

Promotions are another way to get customers to buy your product. Promotions include taste tests, free samples, or discount coupons.

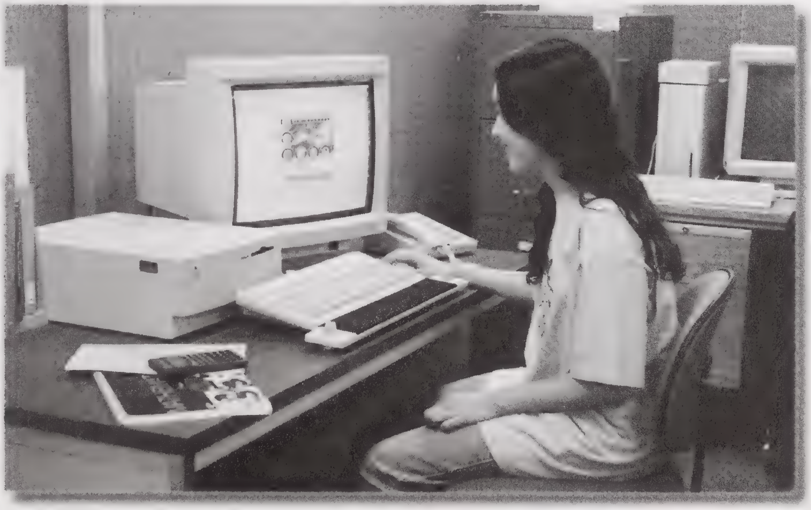
There are several different media to use when advertising a product. These include

- print media
  - newspapers
  - magazines
  - flyers
  - mail outs

- outdoor media
  - stationary billboards and signs
  - mobile billboards on the sides of trucks, buses, or railway cars

- electronic media
  - radio
  - television
  - the Internet

The Internet is an interesting place to advertise because you can combine print, audio, and moving pictures. If you have access to the Internet, try visiting one or two advertising sites.



Study the following chart, which compares different advertising channels. Then answer the questions that follow it.

Media Chart

Medium	Advantages	Disadvantages
Newspaper	• good local coverage • large audience • flexible timing	• short life • cluttered • must be used regularly and be well timed for satisfactory results
Magazines	• special-interest groups targeted • good quality print production • editorial support	• lacks flexibility (difficult to make last-minute changes) • long lead time in preparation • expensive, especially for colour ads
Yellow Pages	• low cost • long life • users often potential customers	• restricted to active shoppers • limited in size and content
Radio	• reaches a wide market • good for pinpointing target markets	• limited audience • lacks permanence • lacks visual support • limited impact • expensive
Television	• creative, persuasive • large market audience • can target specific groups, e.g., teenagers	• short exposure • expensive • message could be lost in a group of ads
The Internet	• flexible • allows for creativity • low cost • long life	• only reaches people with access to the Internet • restricted to those who choose to view your web page
Billboards	• flexible • repeat exposure • presents good corporate image • long life	• message must be short • limited to local traffic
Direct Mail	• can be personalized • flexible timing • good targeting • long life	• high disposal rate • expensive
Personal Selling	• face-to-face contact with consumer is effective • questions and problems can be addressed immediately	• high cost • limited clients (industry, wholesale, retail)

1. Why is it important to advertise a product?

2. You work for an advertising agency and have been given the task of designing an ad for an agricultural product.

   a. Identify the medium you would use for your advertisement. Give two reasons for your choice of medium.

   b. Describe the product you intend to advertise.

   c. Name your target market.

   d. What message do you want to convey to potential customers and how will you get that message across to potential customers?

   e. Why do you think your advertisement will be successful?

Compare your answers with those in the Appendix, Section 1: Activity 4.

To sell goods you must make them available to consumers. To do that you have to consider transportation and distribution systems.

Transportation Systems

Have you ever thought about how agricultural products get to consumers? There isn't just one farmer or one processor involved. In fact, there are many different farmers and processors involved, which means there is a complicated transportation system at work. In Canada, agricultural products are delivered using a combination of trucks, railways, airplanes, and ships.

Examine the following chart to learn more about the types of transportation used in Alberta to move agricultural goods.

Modes of Transporting Agricultural Goods

Transportation	Advantage	Disadvantage
Trucks—most popular form of transportation because of flexibility	• not scheduled as closely as other forms of transport • go to more places than other modes of transport • can be modified to carry specific goods, e.g., add refrigeration units • have access to public road systems	• more expensive than bulk carriers like railways and ships • cannot move very large quantities of goods at one time
Railways—good for transporting large quantities of durable goods	• rail cars can be modified to carry specific goods, e.g., add refrigeration units • low-cost bulk carrier • goes to main manufacturing and distribution centres • can be used to move large quantities and heavy objects	• reach only sites with rail lines • deliveries must hold to shipping schedules
Aircraft—good for moving small costly items or **perishables** like flowers, fresh meats, and fresh vegetables	• fast • reach nearly any place	• expensive • cannot carry large heavy objects or huge quantities of commodities

▼
perishables:
things that spoil quickly
▲

In Alberta, most processed goods are shipped via trucks. Agricultural commoditi are moved using a combination of railways and trucks. For example, fertilizers ar moved from manufacturing plants to large distribution centres using railways. Trucks then carry smaller portions of fertilizer to local distribution points. Consumers transport even smaller portions of fertilizer to their farms using trucks.

Sometimes aircraft are used to transport goods to places that are inaccessible by other means. For example, goods are often flown into places in northern Canada that are not connected to the outside world by roads.

urable goods: *ings that last a ng time without oiling*

Durable goods that are produced in Alberta and sold to overseas countries are usually shipped to ports via trucks or railway cars. There they are loaded into ships for transport overseas.

Innovation

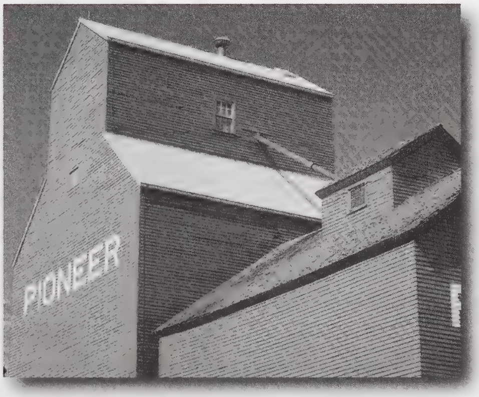
3. Why is an effective transportation system a key element in marketing agricultural goods?

4. If you had a large amount of a commodity to deliver, what mode of transportation would you use? Why?

5. If you had a product that spoiled easily or needed refrigeration, what mode of transportation would you use to move your product closer to consumers? Why?

Compare your answers with those in the Appendix, Section 1: Activity 4.

Storage Facilities



Storage facilities are an important part of any marketing system. Processing plants need two types of storage facilities. One for storing raw agricultural goods and one for storing finished goods. Both storage facilities need to be fairly large. The storage facility for raw materials needs to hold enough material to take advantage of bulk purchasing and contain enough inventory to keep the plant operating between purchase shipments. The storage facility for finished goods needs to be large enough to store finished goods until they can be shipped to distribution centres.

Trucks, railway cars, ships, and aircraft act as temporary storage facilities as they take goods to their destinations. Distribution centres need storage facilities to hold goods until consumers buy them. Consumers usually need some type of storage facilities until the products they buy are consumed.

Storage facilities need to be constructed carefully, keeping in mind the nature of the good being stored. Perishable goods such as milk, fruits, or vegetables require refrigeration. Grains need to be kept in clean, dry places that are protected from pests.

Poorly constructed storage facilities can lead to financial losses. If raw materials spoil, production schedules are disrupted and downtime occurs. The spoiled raw materials will need to be replaced, which is an additional expense. Spoiled finished goods mean extra manufacturing costs to meet sales agreements, and if the goods are not replaced promptly, it could mean cancellation of those agreements.

6. Why is refrigeration important in storing perishable agricultural goods?

Compare your answer with the one in the Appendix, Section 1: Activity 4.

In this activity you examined how products get from producers to consumers. You discovered that the marketing process includes the following steps:

- Consumers are made aware of products through advertisements and promotions.
- Goods are transported to a location where consumers can pick them up.
- Storage facilities are often needed because of the timing differences between production and consumption.

ACTIVITY 5

Processing Facilities

There are many types of processing facilities, just as there are many types of consumer products being processed. Each processing facility is designed to meet the needs of manufacturing a particular product or group of products. Yet, all processing plants have certain common characteristics. In this activity you will learn about common processing features.

Physical Plant

Before going on with this activity, think of a food product. Now try to envisage the processing plant in which that product was made.

1. List ten things found in or around a processing plant that would be common to other processing plants no matter what they were producing.

Compare your answer with the one in the Appendix, Section 1: Activity 5.

Buildings

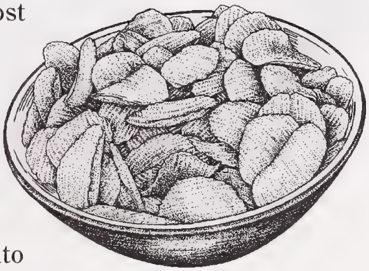
One of the first things you may have listed as being common to all processing plants is a building. Buildings are important parts of every processing operation in Alberta. They keep raw materials, machines, finished products, and workers safe and secure.

Try imagining what it would be like operating a bakery in the open air. What are some of the problems you would encounter? Birds, insects, and animals would eat your raw materials. Dirt, grit, and other undesirable material would get into your bread dough. Rain and snow would rust your machines. Sand and grit would accelerate the wearing of moving parts. In winter, your staff would get little work done because they would spend most of their time huddled around your bake ovens. Birds, insects, animals, and people would raid your stockpile of finished goods all year round. Having a good building would eliminate most of these problems.

Machinery

echanization: *e replacement human and imal power by achines*

The next item you may have included in your list of things common to all processing plants is machinery. **Mechanization** has occurred in most modern processing plants.



For example, potato chips are a product made almost exclusively by machines. Potatoes are cleaned and peeled by machines; then they are carried by conveyor belts to automatic potato slicers. The sliced potatoes are conveyed into large cookers and exit the cookers as chips. From there, chips go into drums where they are seasoned and cooled. Next, they go to automated weighing bins. Once the right weight is reached, the chips drop into bags. Machines seal and stamp each bag. The only human hands to touch the finished products are those of the consumers.

Engineers are instrumental in setting up good production facilities. They are specialists when it comes to buildings, machines, chemistry, and energy. They make recommendations based on the product, the production process, the volume going through the plant, available technology, safety standards, and future needs. Following their expert advice should result in a smooth-running, safe, and efficient operation.

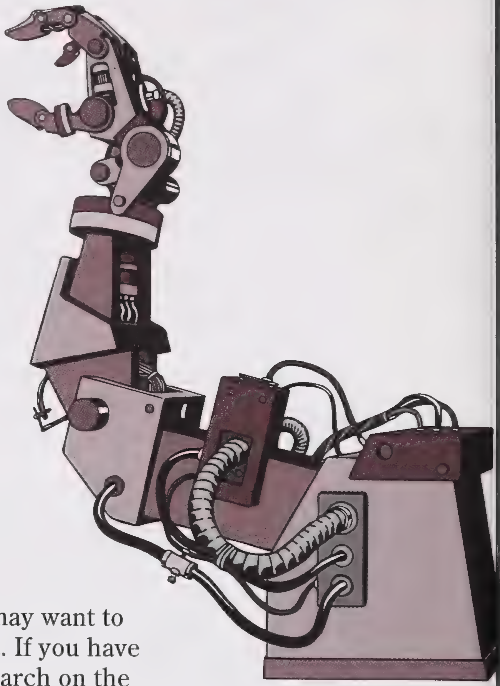
New Technology

robotics: *the study of the design and use of robots*

robots: *computer-guided machines used to do routine work*

Computers are becoming an increasingly important part of modern agricultural processing facilities. They are used to monitor activities like baking and packagin and they are also used in **robotics** applications.

Robotics is becoming more and more important to manufacturing plants. **Robots** can be designed to perform simple, repetitive tasks like filling bottles and screwing on bottle caps. Robots are more efficient than humans, because they do not get tired and they rarely make mistakes. They can be designed to handle heavy, hot, or even toxic materials. Using robotics usually reduces operating costs and increases plant safety.



Innovation

2. Why is a computerized robotic system more cost-effective than a system that relies on human workers? Give at least three reasons.

INTERNET

If you are interested in robotics, you may want to do some extra research on the subject. If you have access to the Internet, you can do a search on the word *robotics.* A couple of interesting sites you may want to visit are

- Robotics Internet Resource Page
  http://piglet.cs.umass.edu:4321/robotics.html
- Robotic Industries Ltd.
  http://www.cadvision.com/robotech/

Remember, these addresses are subject to change.

grading: *assigning ranks or levels to products based on characteristics like size, condition, quality, texture, colour, or appearance*

Laser technology is also used in modern processing plants. Laser technology can detect changes in size, shape, weight, speed, or content. It is used in a variety of ways including **grading** eggs, imprinting bar codes, and activating shut-down switches. Like most technologies, using laser technology increases efficiency and decreases labour requirements.

A new technology being studied for use in processing plants is concerned with consumer safety. Scientists are experimenting with the use of radiation to pasteurize foods. The technology is much the same as that used by dentists who take x-rays of your teeth. Gamma rays, x-rays, or electrons are shot through foods to kill **pathogens** and **parasites**. Irradiation-sterilized foods have been used to feed astronauts and people who have low resistance to diseases.

hogens:
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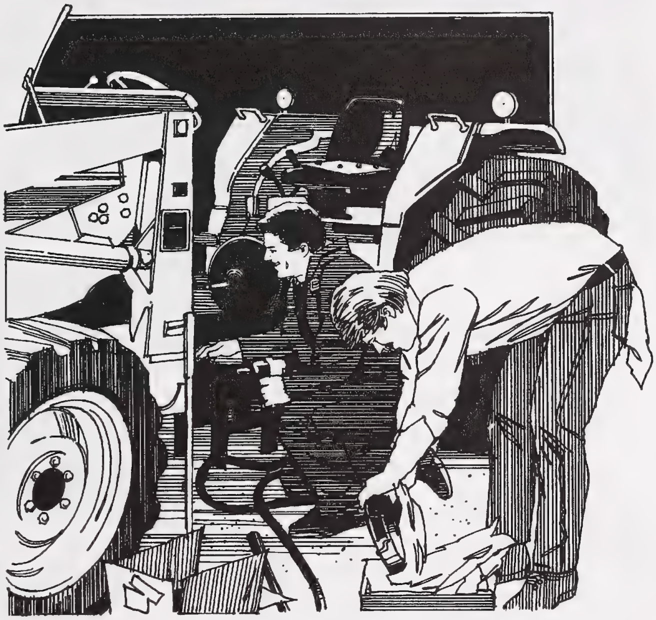
Maintenance and Repair



Replacing buildings and machinery is very costly, so processors do all they can to make their assets last as long as possible. One way to do this is to institute regular maintenance and repair programs. Keeping buildings and machines in good order not only makes them last longer, it also makes them work more efficiently. Plus, it reduces breakdowns.

Replacement

Major changes are eventually necessary. Normal wear and tear takes its toll on machines and buildings, and they must be replaced. New technologies make processing methods obsolete and new ones have to be adopted. Even products become obsolete as research reveals better products. To remain in business, processors must be continually thinking of future developments. If they don't, their businesses may die out or be left behind by the competition.

3. What would happen if you did not maintain your production facilities or work towards improving them?

Compare your answers with those in the Appendix, Section 1: Activity 5.

In this activity you learned about processing facilities that are common to most production plants. You should now be able to discuss the importance of buildings and machines in the production process.

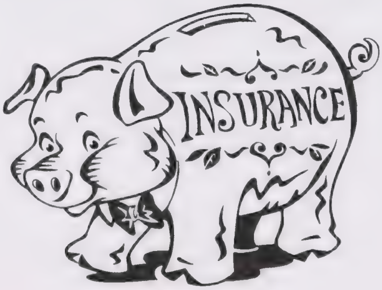
ACTIVITY 6

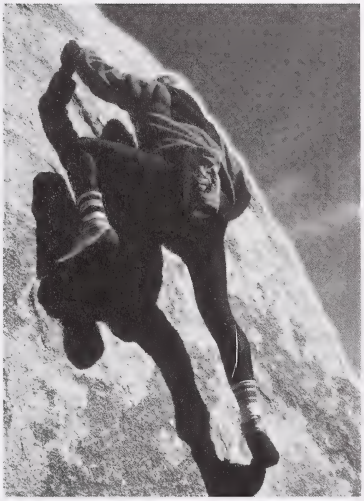
Risk Management

Keeping a processing plant operating smoothly is a complicated task. With all the complications there is a certain amount of risk.

Try to think of one adventure story that did not involve the protagonist in a risky situation. You probably can't because to be an adventure, there has to be some ris involved. Heroes and heroines routinely risk their lives to save orphans from drowning, or prevent the world from being destroyed by evil beings from another planet. Risking everything for a good cause is what being a hero or heroine is all about.

Likewise, people going into a business venture must accept the fact that there is some risk involved. They are risking their money because there is a chance their businesses will fail. But like other prudent risk takers, they can reduce the amoun of risk by planning for eventualities.





Mountain climbers, for example, reduce the risk of falling from practice towers by using ropes and pulleys. Snowmobile racers reduce the risk of injury by wearing protective clothing and a helmet. Managers reduce the risk of business failures by planning for business mishaps.

One way of planning for mishaps is by asking *what if* questions. For example, a manager might ask, "What if we ran out of raw materials because local crops were wiped out by inclement weather?" If the answers to these *what if* questions reveal a great deal of trouble for the business, managers can prepare for the hypothetical situation. Their plans may never have to be followed, but if the situation does occur, they will be able to react quickly and, in so doing, possibly save the business.

For example, a manager might arrange to buy raw materials from producers in several areas of Alberta rather than relying totally on local producers. If there is a local crop failure, the business will still have commodities coming in from other areas of Alberta. That may be enough to tide the business over until alternative supplies can be found.

Another way to reduce risk is to get advice from professionals or industry experts. Their coaching may steer you away from potentially dangerous situations and help you avoid making costly mistakes.

Other ways of reducing risk include using legal advice when dealing with suppliers and customers. Getting adequate insurance on your business's assets is a way to reduce the risk of losses due to fire or theft. You can reduce your personal risk by having other investors put money into the venture.

You will always face risk in your business, but using these techniques will keep your risks to a manageable level.

Safety STOP

Assume you are operating a business that manufactures cookies. Your cookies are sold in grocery stores throughout Alberta. Think of two *what if* scenarios related to the operation of this business. Describe the scenarios and a possible solution for each.

Compare your answer with the one in the Appendix, Section 1: Activity 6.

In this activity you looked at how to manage some of the risks associated with running a business.

In the next activity you will see how the process of developing a consumer product is applied to an actual case study.

ACTIVITY 7

A Case Study

Walter Makowecki is the president and part owner of Heritage Foods Ltd., the company that makes Cheemo perogies. At the age of 45, Makowecki, along with family and friends, started a perogy-making plant in Edmonton. The plant began operating in 1972, but he had come up with the idea many years before.

Makowecki states, "The first time I broached the question of a perogy factory was in 1964. I said let's invent a machine to make perogies. My people laughed at me (but) I kept pursuing it (the idea)."

Formulating the Idea

Walter Makowecki was convinced that if he could mass-produce a quality perogy, would sell. He enjoyed eating perogies and he noted that most people, no matter what their ethnic background, enjoyed eating perogies.

In 1969, he got serious about making perogies. At that time, he was in his second year of anthropology at the University of Alberta.

When asked what anthropology had to do with getting into the food business, Makowecki's response was "Everything. It is the study of how people live, how they are interdependent on each other, and how societies change."

He went on to explain that he observed society changing around him. More women were entering the work force. They did not have time or energy to prepar nutritious meals after completing an eight-hour workday. They needed simple, convenient foods. In 1972, Makowecki set out to provide such a food.

Makowecki had no experience in food processing; he relied on advice from professionals and industry experts to help reduce risks. He states, "I was fortuna to have some good advisors, friends, accountants, experienced people."

Planning the Venture

The problem was that perogies had to be made by hand. There were no perogy-making machines in Canada. Mackowecki knew that a commercial operation was feasible only if the labour component could be reduced.

That problem was solved when he learned that a perogy-making machine was available in the former Soviet Union. He bought that machine and brought it to Canada.

Makowecki decided to locate the plant in Edmonton because it was a good distribution centre, with access to over 2 million people. Distributors moved goods from Edmonton to places in Saskatchewan, British Columbia, and Northwest Territories. A good supply of high-quality inputs like vegetables, potatoes, flour, energy, and labour were located nearby.

Financing the project was an obstacle to overcome. Start-up capital was obtained by selling shares in a company. Makowecki convinced his wife and two other families to invest in the perogy-making plant. Together, they came up with $50 000. This enabled them to begin production.

Implementing the Plan

In the first few months of operation, the business struggled to survive. More financing was needed to replace the existing processing facility. The original building was too small and inefficient. The new facility was an old meat-processing plant with refrigeration lockers—something which was needed for the new direction the business was taking.

The original business plan changed very quickly. Makowecki explains, "We were thinking very small. We were thinking a small plant with a couple of drive-ins trying to duplicate what Burger King did. Well, when I bought that first machine, it became evident that machine could produce more perogies in a day than the three drive-ins could sell in a month. We had discussions on where we should go next."

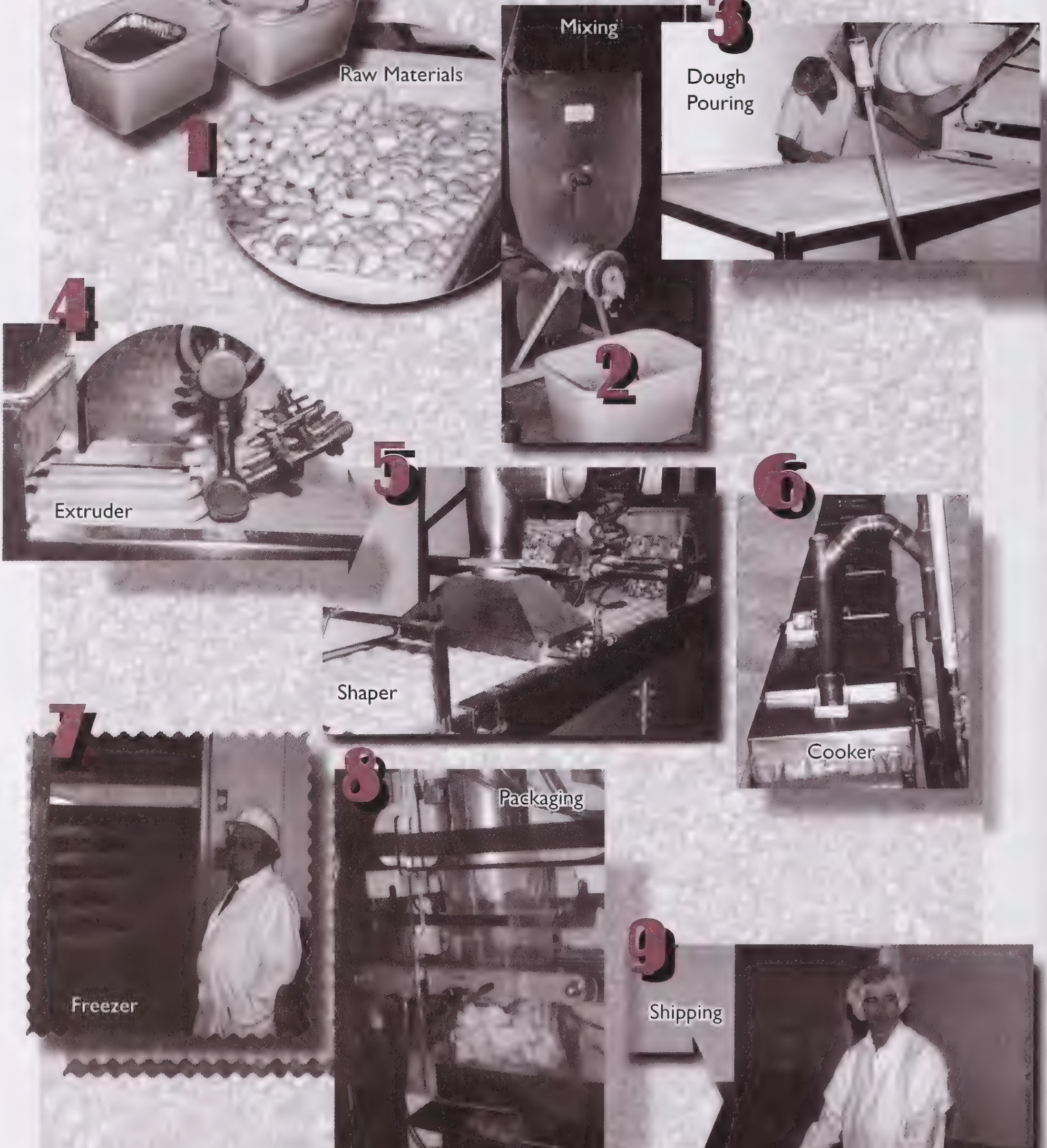
It was decided that a new marketing strategy was needed. Instead of marketing perogies through company-owned drive-in restaurants, there would be a concerted effort to sell them to retail grocery stores. But before that could happen, consumers had to be introduced to the product. So, Makowecki, along with family members, went to fairs, expositions, and trade shows to promote their perogies.

The promotions worked. Demand for their product increased. Soon contracts were obtained to supply perogies to small and large grocery stores.

The success of Heritage Foods drew the interest of other companies. Soon Heritage Foods was struggling to retain its place in the market. Some big companies tried to take over Heritage Food's share of perogy sales, but Cheemo perogies remained a top seller. All the hard work that went into marketing the product paid off. Makowecki states, "My lesson here to everyone is never forget your home market. That is your staple. That is where you have control. You can see what is happening."

Makowecki prizes his loyal customers because it is their support that helps him seek out new markets.

Perogy-Making Process



Quality Control

Meeting government regulations for a food product was not a big problem for the business. In fact, Makowecki says he wanted to produce a good product regardless of government safety regulations. He wants a product to be proud of because it is tied very closely to his self image. His reputation is on the line, so he makes sure that his perogies are of the best quality.

Evaluating the Project

Makowecki believes, "If you have a staple product, there's a future for it." He goes on to say that in the current economic system the only way to survive is to expand, which is what the business is going to be doing in the near future. It is expecting to expand its production plant and seek out new markets.

One of the ways Heritage Foods is reaching new markets is through the Internet. At this website you are introduced to the business and given some interesting facts about its products.

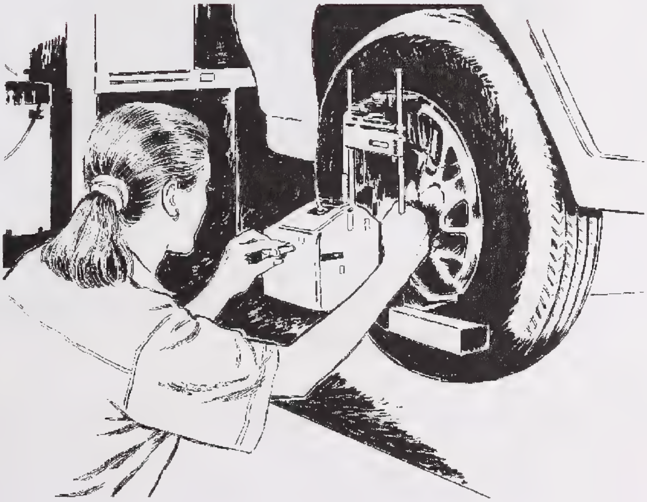
You can visit the Cheemo website at the following uniform resource locator (URL):

http://www.cheemo.com/realhome.html

Remember, Internet addresses are subject to change.

ACTIVITY 8

Developing Consumer Services

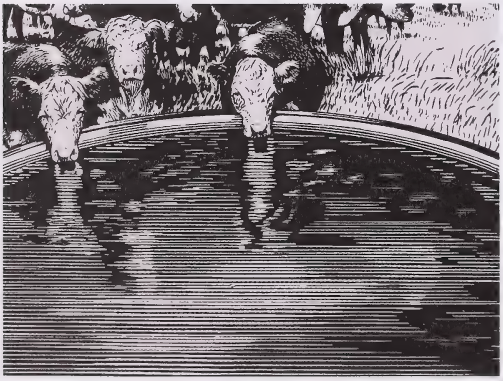


Much of what has been said about developing a consumer product applies to developing consumer services. When developing consumer services, entrepreneurs must do the following:

- start with a good idea
- develop a business plan
- implement the plan
- evaluate the business's progress
- be aware of and follow all government regulations concerning the business
- ensure the quality of the service remains high
- reach consumers with their service through advertising and other means
- purchase equipment, supplies, and in some cases inventory
- hire people
- maintain a physical space for storing equipment, records, and supplies
- deal with risks

The main difference between providing a consumer product and a consumer service is in the output. A consumer product is a tangible item. It has value that i used up after the consumer puchases it. For example, a pie manufacturer makes pies. The pies are tangible items that are sold to consumers. It is in the eating of the pie that the consumer enjoys the benefits of the pie.

A service, on the other hand, does not produce a tangible end product. Instead, t value of the service enhances the value of an asset already owned by the consumer.



For example, a small-engine repair shop repairs a consumer's water pump engine. The value of the pum engine increases, as the mechanic uses his or her knowledge and expertise to repair the machine. Another example is a bank that provides bookkeeping services to a farmer. The farmer owns his or her financial information, but the bank records, sorts, and reports that information in a meaningful way making it more valuable.

Other differences between consumer products and consumer services is that service providers do not usually have raw materials inventories, finished goods inventories, or processing equipment. However, when it comes right down to it, service providers, like manufactures, are in the business of providing consumers with something of value.

FOLLOW-UP ACTIVITIES

If you had difficulties understanding the concepts in the activities, it is recommended that you do the Extra Help. If you have a clear understanding of the concepts, it is recommended that you do the Enrichment.

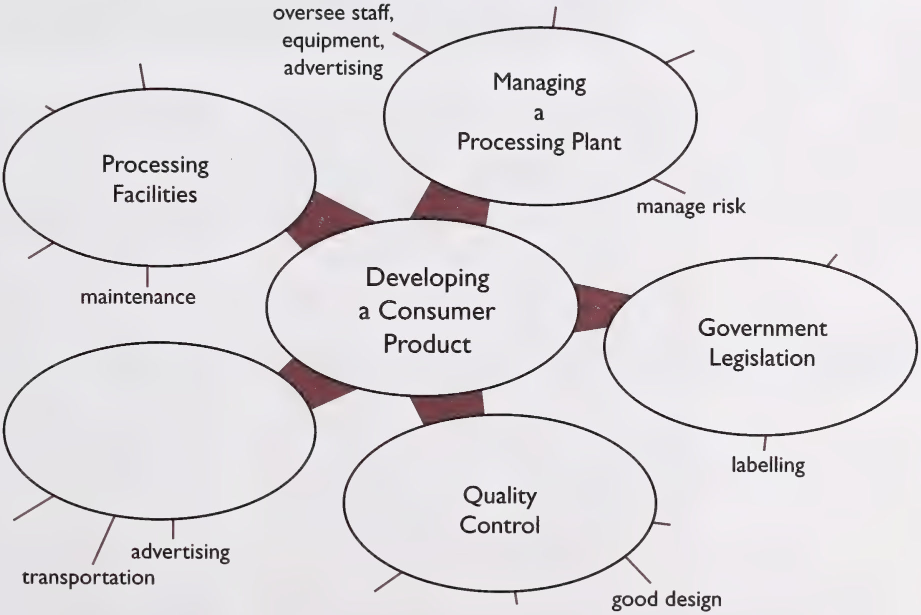
Extra Help

1. You have come up with a great idea for a new spaghetti sauce. You want your product to be successful, so you have decided to follow what you've learned about developing a consumer product in Agriculture 1060.

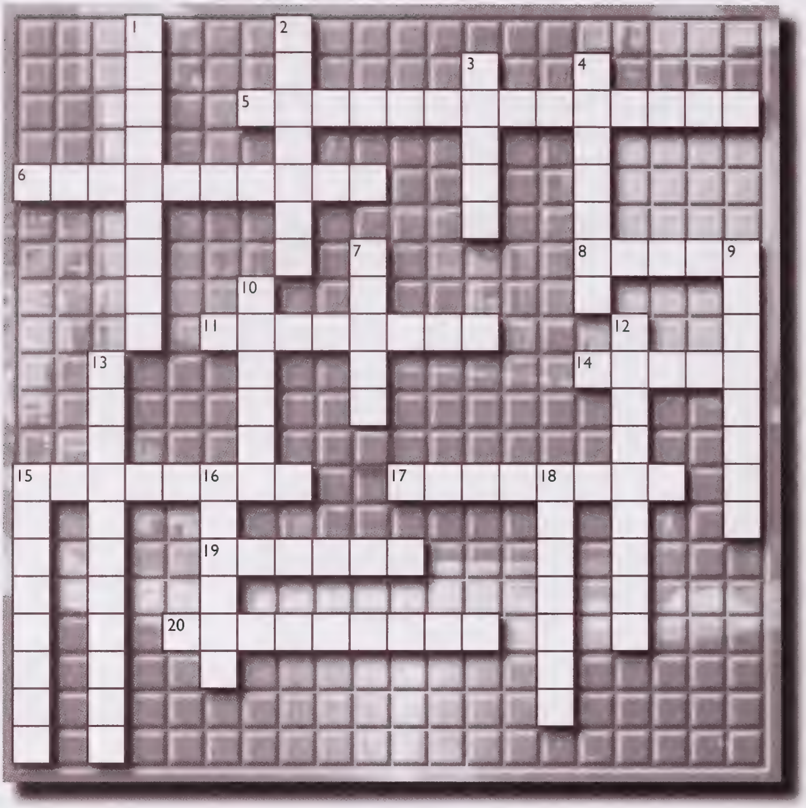
   First you identify the steps you will need to take:

   - formulate the idea
   - plan the venture
   - meet safety standards
   - implement the plan
   - evaluate the project

   Then you review what else goes into the production of a consumer product. Complete the following web to summarize what you have discovered.



2. Complete the following crossword puzzle to help you review the terms covered in Section 1.



Across

5. means of moving goods from place to place
6. ________ goods; goods that spoil quickly
8. assign rank or level
11. ________ selling; face-to-face contact
14. area on a package describing the contents
15. structure housing a manufacturing process
17. person who buys a product
19. excess of incomes over expenses
20. rules or legislation set up to ensure consistency in products

Down

1. poison to kill insect pests or weeds
2. ________ goods; long-lasting products
3. computer-guided machine used to do routine work
4. container surrounding a consumer good
7. steer clear of as in risky situations
9. determine worth; assess value
10. preliminary sketch or plan
12. all business activities involving moving products from producers to consumers
13. surroundings
15. ________ plan; planning tool for clarifying vision of new venture
16. raw materials or other things that go into making a product
18. sameness

Compare your answers with those in the Appendix, Section 1: Extra Help.

Enrichment

1. In Activity 5 you studied processing facilities. You learned that there are certain things that are common to all processing operations like buildings and machinery. To help you visualize what happens in a processing plant, view the video *Inside a Meat Processing Plant.*

2. Consumers can obtain information about products being sold from a number of places. There are magazines such as *Consumer Report* that are dedicated to informing consumers about products. CBC television produces two programs aimed at informing consumers: “Market Place” and “Street Cents.”

   Write a short summary of a case presented in one of these or any other consumer-information source. Be sure that your summary includes the report’s conclusion. Your report should identify the following:

   - the consumer product being discussed
   - the medium you used to find out about the product
   - the title of the magazine or television show
   - the title of the article
   - the author (if applicable)

If you have access to the Internet, you may wish to visit two sites to collect information on consumer products:

Street Cents, at **http://www.halifax.cbc.ca/streetcents/**

Market Place, at **http://www.tv.cbc.ca/market/**

Remember, Internet addresses are subject to change.

3. Take a trip to the grocery store. Visit each department—dairy, meat, produce, frozen foods, and bakery. Note how the items are packaged. Read the labels on several items. Are any of the packages not up to the standards discussed in this section?

4. Choose a food product and design a package for it.

Compare your answers with those in the Appendix, Section 1: Enrichment.

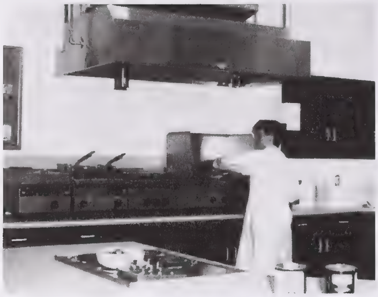
For years people have been developing food products. To do it they had to rely on their own resources. This changed when the Alberta government opened the Food Processing and Development Centre in Leduc, Alberta. Now there is help for people trying to develop a food processing business.

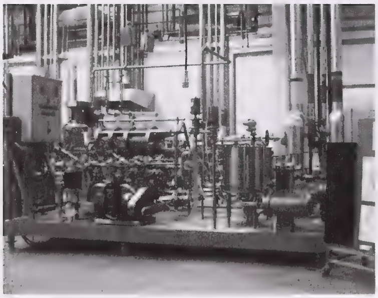
The Centre provides a place for food processors to test new products and investigate new technologies. About 120 companies per year work at the Centre. Since opening in 1985 many new products have been developed and perfected at the Centre such as the Canadian Cold Buster bar (now called the Access bar).

Read the following article from the *Alberta Report* about the Alberta Food Processing Centre.

HELPING TO MAKE *ALBERTA MADE* EVEN BETTER

Companies use the Centre for product development and interim processing.


The test kitchens.


Ultra-Filtration equipment (unique in Alberta) located in the wet processing area.

Deep frying equipment used in the development of the "Taco Nugget."

Your corn relish is a perennial favourite at the church bazaar. Your friends and family rave about your home-made barbecue sauce and salad dressings. Someone says (yet again), "You know, you really should bottle and sell this!" and you think, Why not?

How do you begin to commercialize your product? Start at the Alberta Food Processing Centre in Leduc. Half of Alberta's food processing companies have knocked on the centre's door since it opened in 1984, says director Ron Pettitt.

The centre is a modern, fully equipped pilot plant and product development laboratory facility, staffed by trained food scientists and engineers. "We're in the business of technology transfer," Mr. Pettitt explains. "We work with companies to develop products and start up manufacturing processes. It's very costly to develop a product and get it to market. Many companies aren't big enough to set up a plant, so we can provide services for them while they get established."

The food and beverage industry is Alberta's largest secondary manufacturing industry, generating more than $5.6 billion and accounting for more than one-quarter of Alberta's total manufacturing. This sector of the economy has been growing at a rate of five to six per cent a year, and that figure is now accelerating, says Mr. Pettitt. "We're having great success in attracting new businesses, and good results in developing new products." Furthermore, locally processed goods are replacing food products brought to Alberta from other regions of Canada and abroad. Developing new products and new processes is the key to maintaining this growth.

"We're in the business of technology transfer. We work with companies to develop products and start up manufacturing processes."

Alberta Agriculture, Food Processing

Over the years, the centre has assisted food developers with everything from nutritional analysis, labelling and packaging, to 'sensory evaluation' by consumer panelists who evaluate how food tastes, smells, looks and feels. It's also the place to go to find out how to 'scale up' that recipe for commercial production. "A kitchen recipe may make a good product, but there's a big difference between a home recipe and a commercial product. We can help people scale up to that level," says Mr. Pettitt.

Clients get access to test kitchens, a product development and analytical lab, and a fully equipped pilot plant for test market manufacturing or interim production. The 15 staff members have backgrounds in meat, dairy and cereal science, baking, beverages, engineering, packaging and sensory evaluation.

The centre receives six or seven applications for technical assistance a week. A committee reviews these applications and, if they're approved, applications are passed on to the appropriate scientist. Contracts, covering ingredients, staff and costs, are then negotiated. "No idea is too crazy," says Mr. Pettitt. "Tastes and markets are changing rapidly, and what might not have made commercial sense last year may be the product that catches on next year.

"We use several criteria in judging applications," Mr. Pettitt continues. "Do they make sense? Do they have a business and marketing plan? Do they have sufficient financial resources? Have they arranged for manufacturing facilities?" If an application meets some, but not all of the criteria, the centre may refer the applicant to the Industry Development Branch of Alberta Agriculture, Food and Rural Development which has a mandate to assist companies to develop products, business and marketing plans and aid in attracting capital.

Clients get access to test kitchens, a product development and analytical lab, and a fully equipped pilot plant for test market manufacturing or interim production.

Companies large and small have worked with the centre—113 in 1994 alone. Gainers developed a new product at the centre so it wouldn't have to interrupt its regular production line. Vans Foods has used the centre to develop a less salty jerky product for the Japanese market. BeeMaid Honey Ltd. introduced two new products with centre assistance: a honey mustard and a new honey barbecue sauce.

The centre has had some outstanding successes, such as helping to turn the Canadian Coldbuster Bar from an 'inedible cookie' into a top-selling food bar that's now being manufactured in Beijing, Alberta and the U.S.A. (Now renamed "Access" for the American market, it's popular with endurance athletes as a sports nutrition bar.)

New products, such as the "Taco Nugget," have been developed at the centre. The "Taco Nugget" is a finger food: a blend of lean Alberta beef, combined with special seasonings to give it that Mexican flavour. It's sealed in a bright corn coating that, when fried, has a rich corn flavour and the appearance and texture of a taco shell. It's now being manufactured by Centennial Foods.

Because the centre is federally inspected, products manufactured at the centre may be exported to other provinces and countries. Of course, the centre also works closely with its sister branch, the Food Quality Branch, which assists food processors and government agencies in maintaining the quality and safety of food produced in the province.

Many of the centre's projects involve meat products. Here, the silent cutter at work.

Several companies have used the centre's manufacturing facilities as an interim measure. "When a company is growing and close to establishing a new production facility, they can lease time and space here to get their company established," Mr. Pettitt explains. Companies bring in their own personnel to staff the lines, and may also bring in their own equipment. Saxby Foods, who produce a range of English Trifle desserts, used the centre's production facilities. Allison Valley Foods used the centre to develop and manufacture microwavable burgers and french fries. Bassili's Best Lasagna used the centre for 13 months until its own plant was up and running. Canyon Creek is now using the centre to produce fresh, salt- and m.s.g.-free soups. FNA Foods has been at the centre for over two years. "They're extracting natural binding proteins from blood plasma. If you take something like tenderloin trimmings and add these binding proteins, you get a product that's indistinguishable from a tenderloin steak," says Mr. Pettitt. "It's a totally new technology for Alberta."

Inhouse library services and a computerized search and retrieval system allow clients and centre staff to access international technologies in product and process development. Centre specialists are available to provide in-plant technical consultation and advisory services: troubleshooting, product development, plant start-up, quality control/quality assurance, and process or equipment modifications.

"If current activity in the industry is any indication, we can expect to see even further growth in the food and beverage industry. The centre is well equipped and staffed to serve this growing need, and we're anxious to play a supporting role during these exciting times," Mr. Pettitt concludes.[1]

Task Management

5. Contact the Food Processing Development Centre and try to find out what happens there. Questions you may want to ask the person you talk to include

- What is the goal of the Centre?
- Why was it set up in Leduc?
- Who finances the operation of the Centre?
- How large a building houses the Food Processing Development Centre?

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[1] Alberta Agriculture, Food Processing Development Centre, "Helping to Make *Alberta Made* Even Better," in *Alberta Report*, 19 June 1995. Reprinted by permission.

- What types of equipment are made available to clients working at the Centre?
- How many people work at the Centre?
- What are their job titles?
- What type of services are offered to clients at the Centre?
- What types of products are now being tested at the Centre?

The Food Processing Development Centre may be contacted at

- Food Processing Development Centre
  Alberta Agriculture, Food and Rural Development
  6309 – 45 Street
  Leduc, Alberta
  T9E 7C5

- (403) 986-4793
  or the government rite number

- **http://www.agric.gov.ab.ca/food/process/listfdpr.html**

  Remember, Internet addresses are subject to change.

Discuss your findings with a study partner.

Compare your answers with those in the Appendix, Section 1: Enrichment.

CONCLUSION

Consumers want the best possible product at a reasonable price. They want safe products that meet their needs. Producers in Alberta supply consumers with jus such products.

In this section, you looked at the steps involved in developing a consumer produ The project must be planned carefully. Processes must be designed to make high quality finished goods in safe, efficient, environmentally friendly ways. Labour, r materials, and capital must be obtained. Products must be tested by government agencies.

There is nearly as much work that goes into developing a consumer service. Skil inventory, or both must be obtained to meet the clients needs. Capital must be obtained to secure a business location. Clients must be informed about the servi being provided.

There are risks involved in developing consumer products or services. However, for those businesses that succeed, the benefits outweigh the risks. There is also personal satisfaction in doing a job well. If you have a good idea, you may find a rewarding career in this area of agriculture.

ASSIGNMENT

Turn to your Assignment Booklet and do the assignment for Section 1.

SECTION 2

Career Clusters

PHOTO SEARCH LTD.

"What do you want to do?"

"I don't know. What do you want to do?"

HAVE you ever had this type of conversation with one of your friends? It's possible that you discussed many alternatives before deciding what to do.

You may be having a similar type of conversation with yourself about what career path to follow. At first, you just don't know what it is you want to do. Then, you start looking at alternatives, such as getting a job processing agricultural goods. Studying this section should help you decide what to do next.

In this section you will learn about several possible career opportunities in the agricultural industry. You will investigate career clusters, study current employment trends, and look at future career opportunities. Upon finishing this section you should be able to decide whether to continue looking at agricultural processing as a possible career avenue.

ACTIVITY I

Job Opportunities

Now that you have some idea of what’s involved in developing products and services in agriculture, do you think there might be a career for you within it? It’ possible. Because agriculture is a large industry and it has many different activities, it has career potential for just about every type of personality.

The different activities within the agriculture industry are usually grouped into f sectors:

- processing
- marketing
- production
- support services
- resource management

In this activity you will look at possible career avenues in each of the five sectors More career information is provided in the Occupational Classification part of th Appendix. Information about job trends discussed in this activity come from *Job Futures Volume 1: Occupational Outlooks.* You may be able to find this publicatio in your library and refer to it for more labour preditions.

▼

entrepreneurs: *people who start and operate their own businesses*

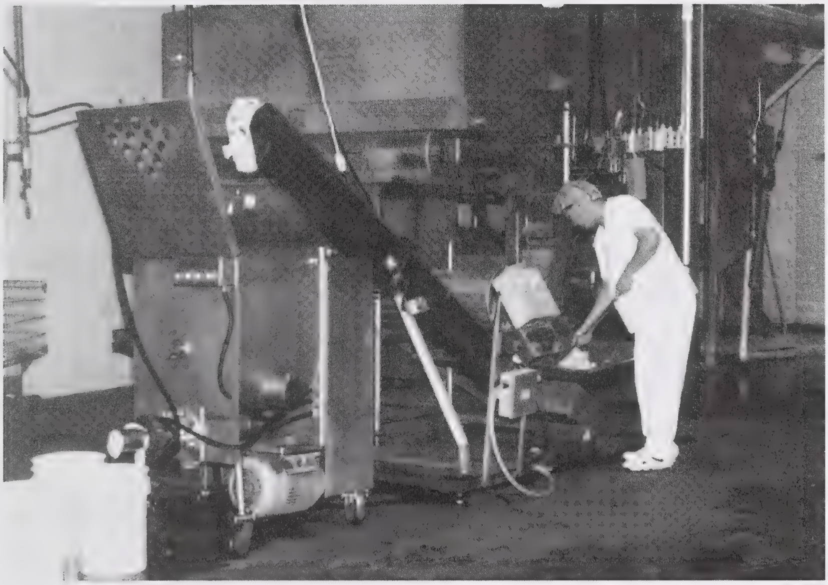
▲

Processing Sector

In Alberta, processing takes place on many different levels, from small home-based businesses to large manufacturing plants. Occupations in this area include technicians, food scientists, managers, and **entrepreneurs**.

Technicians

Technicians are skilled people who apply scientific knowledge in a practical way. In a processing plant, they can be found operating machinery, servicing machinery, or performing quality-control functions. For more information about occupations as a technician, see the Appendix, Occupational Classifications 2221, 9454, 9461, 9462, 9465, and 9617.



Food Scientists

i-businesses: *rprises lved in ducing, cessing, ing, or keting icultural modities*

Food scientists carry out a number of functions in **agri-business**. Some use modern scientific and engineering techniques to discover new foods, new processing methods, or new distribution systems. Some are responsible for setting and meeting quality-control standards. Some food scientists work at investigating new methods of storing and preserving foods. Still others work for organizations like Health Canada, inspecting products and processing facilities to make sure they meet government standards. For more information about occupations as a food scientist, see the Appendix, Occupational Classifications 2121 and 2222.

Managers

Managers are needed to coordinate and direct processing operations. They see that resources are used effectively and efficiently. Managers have to be people oriented because much of their time is spent working with people, motivating them to reach production goals. They also have to have business sense because their decisions steer the business towards success or failure. For more information about occupations as a manager, see the Appendix, Occupational Classifications 0911 and 9213.

Entrepreneurs

Entrepreneurs are people who recognize an opportunity or a good idea and then try to turn i into a successful venture. They identify consumer wants and needs and then find a way to satisfy them. Entrepreneurs mu gather the necessary resources for a successful business: land, buildings, money, and labour. Walter Makowecki, whom you learned about in Section 1, is a example of an entrepreneur.

Entrepreneurs who develop agricultural products and services can be involved i variety of ventures including the following:

- setting up processing plants
- pre-processing commodities, e.g., peeling potatoes
- delivering goods
- advertising products
- setting up telecommunication lines
- repairing equipment and servicing machines

Processing Job Trends

Did any of the careers in the processing sector interest you? What are the chance of you finding employment in this sector? The trend for jobs in processing is expected to remain stable up to the year 2000.

New jobs should appear in the area of preparing agrifoods. There are two reason for this. First, governments are encouraging the production of agrifoods. Also, more processed goods will be manufactured in Alberta because freight subsidies have been eliminated. The federal government used to subsidize the movement grain and other commodies from the place of origin to ocean ports or distant manufacturing plants.

The transportation subsidy promoted the export of raw agricultural goods from places like Alberta. With the subsidy gone, agrifood manufacturers will be encouraged to locate in Alberta to be closer to the source of their raw materials. Consequently, new jobs will be created in the processing industry.

Employment opportunities for food scientists and managers are expected to remain good. The success of people working as food scientists will depend on th willingness to keep pace with technology, and technology is expected to change rapidly. Managers in the processing sector can expect to face strong competition with many highly trained people seeking work in this area.

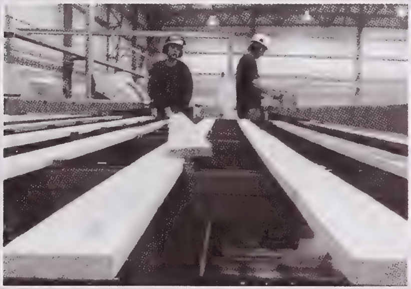
Read the article entitled *Alberta manufacturers pumping out new jobs.* It gives an idea of job trends in manufacturing. Food processing is included in the discussion. The article not only applies to career opportunities in manufacturing, it reviews some of the points made in Section 1 on developing a consumer product. Notice that when deciding to locate a manufacturing plant, businesses look at the availabilitiy of raw materials and skilled labour. They also consider tax, land, and energy costs.

Alberta manufacturers pumping out new jobs

Province's manufacturing sector is growing and the pay is good

Ron Chalmers
Journal Business Writer

Edmonton



One of the stars of Alberta's economy these days is—surprise—manufacturing, which created 12,000 jobs in Edmonton and 11,000 in Calgary between 1990 and 1995.

And they're good jobs:"Average weekly earnings for employees in manufacturing are generally substantially higher than earnings across other sectors," reports the *Manufacturing in Alberta* study by Coopers & Lybrand Consulting for Alberta Economic Development and Tourism.

"Manufacturing accounted for over 40 per cent of all new jobs created in Alberta over the past 12 months (to August 1996), and just over 31 per cent of all new jobs in the past 24 months," the study reveals.

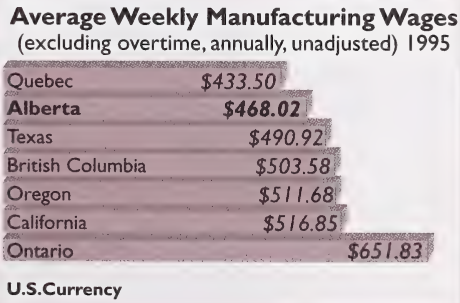
Most Alberta manufacturing builds on the primary industries, adding value in food processing, chemical production, plastics, petroleum refining and forest and wood products. Other manufacturing sectors, such as metal fabrication, serve those indigenous Alberta industires. And some—electronics and biotechnology—develop Alberta's intellectual resources.

The energy industry will continue to spawn related manufacturing, says Bob Saari, Alberta vice-president of the Alliance of Manufacturers and Exporters, Canada.

"What happens in the oilsands will be absolutely remarkable," he believes. "With it being a 20-year project, there will be an opportunity for clusters of companies."

Beyond the natural resources, Saari says "labor is one of the most important criteria that companies look for" in locating a manufacturing operation, and notes that "Alberta has the highest-educated workforce in Canada."

Saari also cites Alberta's low unionization, low cost of living, low personal income tax and no provincial sales tax, all enabling low wage rates—compared with other provinces.


Average Weekly Manufacturing Wages
(excluding overtime, annually, unadjusted) 1995

U.S.Currency

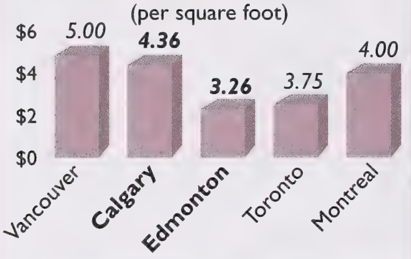
Source: Statistics Canada and the U.S. Department of Labour

But Alberta manufacturing wages are high. David Smith, a co-author of the Coopers & Lybrand study, says they average 22 per cent more than wages in other sectors.

Edmonton manufacturers have an extra edge because of our cheap real estate, says Doug Gerrard, director of industry development in Alberta Economic Development and Tourism. “We may complain about our home prices not going up, but that can be a real plus for companies.”

Employees can live less expensively, and companies can buy industrial land “for $100,000 per acre, compared to $600,000 in Richmond, B.C.”

Industrial Lease Rates
(per square foot)

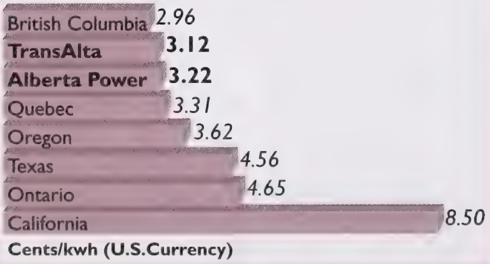


NOTE: For medium size warehouse space

Source: Colliers Macaulay Nicolls Inc. Canadian Real Estate Review 1995-1996

In total, Gerrard claims, “companies can save at least 18 per cent by being in Alberta rather than B.C.”

Industrial Electricity Rates
5,000 kw demand, 70% load factor as of July 1995



Source: Alberta Power and Edison Electric Institute, U.S.

The comparison to the U.S. is even better, he says, because of our low dollar. From 1989 to 1994, the price of Alberta manufactured goods rose, on average, by six per cent in Canadian dollars—but fell by eight per cent in U.S. dollars.

From 1984 to 1994, Alberta’s economy grew by 32 per cent but its manufacturing shipments grew by 112 per cent.

Wood products manufacturing has been expecially strong, as high-lighted by Coopers & Lybrand:

“Alberta’s wood industries have increased by approximately 100 per cent between 1988 and 1995, double the growth rate achieved in B.C.”

In plastics manufacturing, the value added rose from $94.3 million in 1985 to $161.9 million in 1994, while employment rose from 1,735 to 2,388.

The industry has enjoyed healthy growth of investment and value added, but slower job growth. For instance, AT Plastics Inc. of Brampton Ont., is spending $120 million to expand its Edmonton polymers plant—but they will create only about 40 permanent positions.

Alberta’s manufacturing success can be exaggerated by focusing on the value of manufacturing shipments rather than on the value added to raw materials by the manufacturing.

“Alberta leads in many sectors when activity levels are measured in terms of shipments but lags in manufacturing value-added,” the Coopers & Lybrand report observes.

“Alberta’s manufacturing shipments were 77 per cent of British Columbia’s but Alberta’s manufacturing value-added was only 66 per cent of British Columbia’s total, indicating an opportunity for additional growth.”

Ted Chambers, director of the Western Centre for Economic Research, says Alberta manufacturing naturally builds on resource strengths.

The best measure of our manufacturing may be “the number of jobs created per hog slaughtered or per tree cut… the number of jobs for each unit of resource extracted,” Chambers suggests.

“A lot of our output is in the form of commodity grade manufactures such as wood pulp or two-by-fours; there is room for more upgrading."

But higher-level manufacturing—furniture making, for instance—requires higher skill levels.

"The evidence is that we simply do not have those skills," Chambers says. "The skills are lacking throughout the labor force."

According to Alberta Economic Development, this province has the highest education level in Canada, with 40 per cent of the labor force holding a post-secondary certificate, diploma or degree.[1]

Marketing Sector

Marketing entails the selling and shipping of agricultural products. There are many job opportunities in this area of agriculture because goods change hands many times as they make their way from producer to consumer. Occupations in this sector include

- advertisers
- commodity brokers
- auctioneers
- salespeople
- grain buyers
- livestock buyers
- truck drivers

Advertisers

Advertisers design advertising and promotion campaigns for agri-businesses. Advertisers are very important because they create a bridge between processors and consumers. They make consumers aware of products being made by processors and, in a way, create a demand for those products. If you are a creative person with strong communication skills, you may do well in advertising. For more information about occupations as an advertiser, see the Appendix, Occupational Classifications 1122 and 5121.

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[1] Ron Chalmers, "Alberta Manufacturers Pumping Out New Jobs," *The Edmonton Journal*, 27 December 1996, G1. Reprinted by permission.

Commodity Brokers

If you think you would enjoy dealing with large sums of money on an internationa stage you may want to look more closely at this career option. Commodity broker negotiate terms of sale for agricultural commodities. Usually, they act on behalf o companies and governments who wish to deal in large amounts of a certain commodity. For example, you may get a job with the Canadian Wheat Board and have to travel to places like China to work out the sale of millions of dollars worth of Canadian wheat. For more information about a career as a commodity broker, see the Appendix, Occupational Classification 1113.

Auctioneers

Auctioneers provide a service to both sellers and buyers. They help the two partie come together and negotiate a reasonable sales price for agricultural goods. Their bidding system is highly effective.

Salespeople

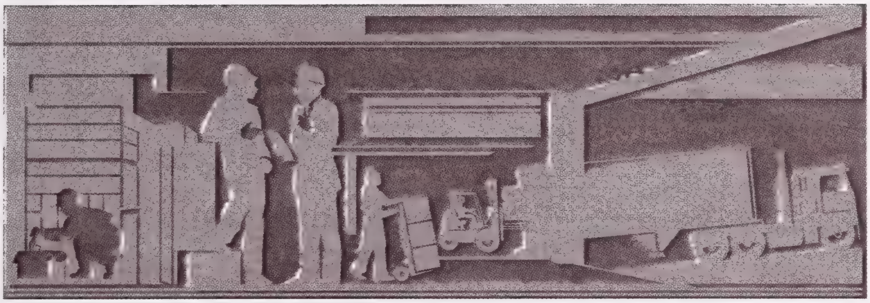
Agri-businesses are in constant need of good salespeople. They need people who can present their products to potential customers in a favourable manner. They also need people who know enough about their products to advise customers on the best way to use them. Possible employers include chemical companies, animal feed manufacturers, and farm-equipmen dealers. Processing plants also require salespeople to sell their products to retailers and consumers. For more information about an occupation as a salesperson or an auctioneer, see the Appendix, Occupational Classifications 0611 and 6411.

Buyers

Processors and other users of agricultural products send out buyers to find and purchase the best possible goods from farmers. These people have to be good communicators and they must know a great deal about the goods they purchase. For example, a buyer for a meat processor must be able to estimate fairly accurately how much live animals will weigh after being slaughtered and prepared for market. For more information about an occupation as a buyer, see the Appendix, Occupational Classification 1225.

Truckers

Distribution of agricultural goods is usually handled by trucking companies. They move livestock, grain, farm machinery, building products, and processed goods from sellers to buyers. For more information about an occupation as a trucker, see the Appendix, Occupational Classification 7411.



Marketing Job Trends

If you are interested in a job in marketing, you should be aware that the employment trends for the sector indicate steady growth.

Employment opportunities for advertisers are good now and it is expected that there will be increased employment in this area in the near future. Many new jobs will be involved in selling through electronic media like the Internet. That means there is a need for advertisers with special skills such as computer programming.

Sales jobs, including those for salespeople, auctioneers, and commodity brokers, are expected to rise to the year 2000. Many of those jobs will be low-paying, entry-level positions. The largest growth in sales positions is expected to occur in the wholesale trade area.

Employment for buyers is expected to remain good for the next few years. Their jobs will change as more computer applications are adapted to their work.

Employment opportunities for truckers are fairly good now. It is expected that there will be a steady increase in job numbers to the year 2000.

Production Sector

At the heart of the production sector is the growth and development of plants and livestock. Included in this career cluster are activities designed to improve agricultural practices. Occupations in this area include farmers, agricultural engineers, researchers, horticulturists, and technicians.

Farmers

Farmers are unique in that what they do is more than an occupation—it is a way life. Farmers require diligent effort, special knowledge of the activity undertake financial skills, mechanical aptitude, and an optimistic outlook. There are many different types of farming that farmers can choose from including the following:

- grain
- specialty crops; e.g., fruits
- beef
- dairy
- sheep
- poultry
- hogs
- exotic animals

For more information on occupations as a farmer, see the Appendix, Occupation Classifications 8251 and 8253

Agricultural Engineers

Agricultural engineers are scientists w try to keep farmers competitive by applying engineering principles to solv agricultural problems. They devise bett farm equipment, more effective farm buildings, or more efficient agricultural practices. They also attempt to improve farm utilities like electrical systems an waste disposal systems. They often wor on water-drainage and flood-control systems. Agricultural engineers try to come up with practical solutions to practical problems. For more informati on occupations as an agricultural engineer, see Appendix, Occupational Classification 2148.

Researchers

Researchers include agricultural scientists who work at improving agricultural production. They study plants, animals, and soils. Those who study plants try to identify ways and means of growing better crops while animal scientists try to improve animal production through their research. Soils scientists strive to improve crop production by studying soils and the relationship between soils and plants. For more information about occupations as a researcher, see the Appendix, Occupational Classifications 2115, 2121, and 2148.

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Horticulturists

Horticulturists are involved in the production of fruits, flowers, vegetables, and decorative plants. Jobs in this area include grounds keepers, greenhouse operators, and landscapers. For more information about an occupation as a horticulturist, see the Appendix, Occupational Classifications 2225, 8254, 8255, 8256,8432, and 8612.

Technicians

Agricultural scientists are supported by technicians who perform day-to-day activities. For example, in the area of plant science, they seed, fertilize, spray, and harvest research crops. In the area of animal science, they feed and care for research animals.

Agricultural scientists and technicians are employed by a number of organizations, including governments, educational institutions, and agri-businesses.For more information on occupations as a technician in this area, see the Appendix, Occupational Classifications 8253, 8431, and 8611.

Production Job Trends

Employment conditions in primary agricultural production are poor now and are expected to worsen up to the year 2000 and possibly beyond.

The problem is not that the work will disappear. It is that more machines will be used to replace human labour. Farm employment is expected to drop; however, there will be some growth in greenhouse jobs and those related to recreation as the bulk of Canada's population ages and retires. It is expected that the retirees will take up leisure activities like gardening, visiting parks, and carrying on recreational activities.

Employment for technicians is fairly good now, but is is expected to worsen. Technicians with minimal training will have to upgrade their skills as employers begin to hire people with professional qualifications to do work once done by skilled labourers. One bright spot is that there are relatively few young people working in this area. That means there is a need for trainees and rapid advancement is possible for younger workers once the older workers begin to retire.

Support Services Sector

Each day, large sums of money are transferred between businesses and individuals in the agriculture industry. That means people in this industry must regularly contend with financial and legal matters. People in the agriculture industry often require the services of experts. People who provide these support services must be knowledgeable in agriculture as well as in their own areas of expertise. The support service sector includes occupations like

- bankers
- accountants
- land appraisers
- lawyers

Each of these professions plays an important role in agriculture.

Bankers

Bankers supply their customers with useful financial services and financial advic For more information about a career as a banker, see the Appendix, Occupationa Classification 0122.

Accountants

Accountants provide recordkeeping services and tax advice. For more informatio about a career as an accountant, see the Appendix, Occupational Classification 1111.

Land Appraisers

Land appraisers provide clients with realistic property values. For more information about a career as a land appraiser, see the Appendix, Occupational Classification 1235.

Lawyers

Lawyers are needed to see that fairness and justice prevail by writing contracts a acting on behalf of their clients when disputes arise. For more information about career as a lawyer, see the Appendix, Occupational Classification 4112.

Support Services Job Trends

Employment in support services is expected to remain the same or drop slightly. There may be some growth in the area of financial services as changes in regulations and technology are made.

Employment for bankers, accountants, and land appraisers is expected to remain good. Each of these job categories will face increased use of technology in their work. That means they will have to maintain and upgrade their skills in operating computers and other electronic devices.

Employment for lawyers is expected to drop from good to fair. Government positions will decrease as governments continue to cut staff. This will be offset by some new jobs in business law and environmental law.

Resource Management Sector

Air, land, and water are important resources when it comes to producing agricultural goods. There are people who monitor and protect Alberta's valuable natural resources. Occupations in this area include land development officers, environmental workers, and regulatory workers.

Land Development Officers

an:
taining to
es or towns

Land development officers are found in nearly all jurisdictions in the province. They assess the available land base in an area and determine the best use for it. Through their recommendations to local governments, they control the growth of **urban** and industrial areas, as well as ensure that farm land is used appropriately. For more information about careers in land development, see the Appendix, Occupational Classifications 0412, 2153, and 4162.

Environmental Workers

Environmental workers are employed by businesses and governments to monitor air and water pollution. They are also hired to prepare environmental impact studies such as those done on the expansion of the forestry industry in northern Alberta or the one prepared on the impact of the Old Man River dam in southern Alberta. For more infomation about occuptions as environmental workers, see the Appendix, Occupational Classifications 2121, 2153, 2224, and 4161.

Regulatory Workers

Regulatory workers develop and enforce rules and regulations that protect resources and at the same time allow for optimal use of those resources. For more information about occupations as regulatory workers, see the Appendix, Occupational Classification 2153.

Resource Management Job Trends

Employment in the resource management sector is expected to remain stable or worsen slightly.

Employment opportunities for land development officers are expected to remain good but there may be a slight drop in numbers due to government cutbacks.

Employment opportunities for environmental workers and regulatory workers should stay fairly good for the next few years. Public demand for safe, environmentally friendly manufacturing processes should keep people working i these jobs active.

Fairly difficult entry-level requirements may discourage people from going into resource management jobs. That means there is a need for trainees and rapid advancement is possible for new workers as older workers begin to retire.

1. Identify two positions or careers in each of the following sectors of the agriculture industry. Give a one-sentence description of each one you list.

   a. processing sector
   b. marketing sector
   c. production sector
   d. support services sector
   e. resource management sector

Careers

Task Management

2. To further your understanding of a specific career in agriculture, choose a job that interests you; then interview someone who works at that job. Here are some things you should find out during your interview:

   - what the job entails on a daily basis
   - what the pay scale is
   - what qualifications are needed to carry out the job
   - what service(s) the job provides to the agriculture industry
   - what continuing education and upgrading is required by the job
   - what the person likes about the job
   - what changes are predicted for the job over the next five years

   Try to be prepared when you meet with the person you are interviewing. Take along pens and a note pad to record what you learn during the interview. You may wish to tape the interview, but you must ask the person's permission before you start taping.

   After your interview, write a brief summary of what you learned. Include a statement about whether or not this job still appeals to you and why.

3. Which career cluster is expected to provide the best opportunities for people?

Compare your answers with those in the Appendix, Section 2: Activity 1.

If you have access to the Internet, you may find more information about jobs and job openings by searching under the word *labour* or you may wish to visit Canada' Electronic Labour Exchange at the following URL (uniform resource location):

http://ele.ingenia.com/

This address is subject to change.

Another way to find out more about a career that interests you is to contact the Career Information Hotline. The Alberta government operates the Hotline to provide information on career planning. You can contact the Career Information Hotline by phoning 422-4266 in Edmonton or 1-800-661-3753 anywhere else in the province.

This activity has provided a brief description of some of the careers associated with agriculture and consumer product development. As you can see, there are many opportunities open to you.

ACTIVITY 2

The Future of Agriculture

One thing you can count on in life is change. Things were probably very different when your parents or grandparents were your age. The world they grew up in was quite different from your world, and your world will be quite different from the one future generations will experience.

No one knows exactly what the future will bring. But you can probably make some educated guesses based on what is happening now. For example, people in Alberta are used to eating a variety of high-quality food items. It only stands to reason that they will continue to demand such products in the future.

In this activity you will examine the effect of technology on agriculture and consumer-product development. You will relate these changes to your future career opportunities.

Future Career Opportunities

Imagine you were a farmer in Alberta in the 1930s. What changes would you find in agriculture today? If you visit a modern dairy, you may be amazed by a computerized feeding system where eac cow is fed according to data stored in a computer. Or perhaps you might visit a processing plant where you marvel at th use of computer-regulated robots.

Try to think of other changes you might notice. Then, think of the career clusters you investigated in Section 2: Activity 1 and the employment statistics you studied in Section 2: Activity 2. If you combine all this information with what you know about agriculture, consumer-product development, and technology, you should be able to make some predictions about what will happen in the future.

The first thing you may predict is that technology will continue to change the way things are done. For example, robots will likely be used to do more and more work. They may even become complex enough to think on their own, move about freely, and maintain themselves. As a result, fewer humans may be employed in agriculture. Those that are employed will have to be well educated and trained to keep up with technology.

You may wonder what type of work people will be doing in the future. A job study done by Human Resources Development Canada in 1994 predicts that the following jobs will increase in number.

- baker
- cook's helper
- food and beverage processing worker
- aquaculture technician
- environmental technician
- horticulturist
- loan officer
- nursery and greenhouse worke
- real estate appraiser
- veterinary technician

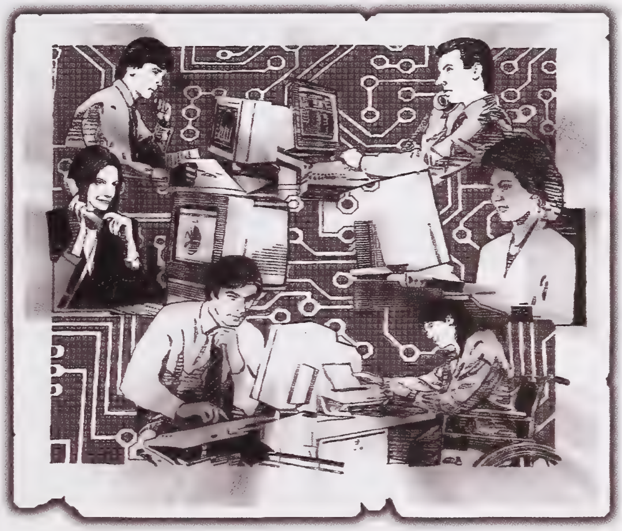
1. Think about your future. What will you be doing two years, four years, and ten years from now? Are you going to be going to school? Are you going to be working at a job? What career path are you going to follow? How does your career choice relate to agriculture and consumer-product development? Create a time line of your future. Start with what you are doing now and continue the time line for ten years. List the things you plan to do during those years.

Innovation

2. Technology has changed agriculture production over the past 50 years. What technological changes do you think are likely to occur in agriculture in the next 10 years?

Compare your answers with those in the Appendix, Section 2: Activity 2.

Future Products and Services



Technology will not only affect your career, it will affect the products and services you use. How will consumer products change? No one knows for sure, but it is possible to draw some conclusions based on what consumers value now.

Consumers value quality, safety, good health, and convenience. It is likely that new products will be developed to meet these consumer needs. Consumers also value the environment, which means that future production processes will minimize damage to the environment. With better techniques, processing operations may actually help the environment. These are only a few examples of what you may see in the future. Can you think of any more?

ommunication

3. Come up with an idea for a new product that you think will be a part of the future. It can be any consumer product, as long as it is related to agriculture in some way. Briefly describe your idea.

Compare your answers with those in the Appendix, Section 2: Activity 2.

Agriculture has changed over the years and it is likely to continue to do so in the future. In this activity you peered into the future. Although you do not know for certain what is going to happen, you can make some predictions based on curren trends. One trend you may have seen is that agriculture is becoming increasingly technical and that anyone who wishes to be employed in the industry will need enough technical knowledge to operate the new processing systems that are bein developed.

FOLLOW-UP ACTIVITIES

If you had difficulties understanding the concepts in the activities, it is recommended that you do the Extra Help. If you have a clear understanding of th concepts, it is recommended that you do the Enrichment.

Extra Help

To review the terms you learned in this section, complete this exercise by filling i the blanks with the correct words from the following list.

- advertising
- college
- consumers
- distributing
- employable
- enjoyed
- entrepreneur
- food scientist
- marketing
- natural resources
- production
- resource
- support services
- technician
- technology

Activities in agriculture can be divided into five different sectors: processing, ____________, support services, ____________, and ____________ management. You may find a challenging and rewarding career in any one of thes sectors.

In the processing sector there are a number of job opportunities. You may be interested in becoming a ____________, who operates some of the processing machines, or you may wish to become a ____________ so you can research new food products. You may even want to be an ____________ and start your own business.

If you are interested in marketing agricultural products, you can do a number of things. You may be interested in ____________ products so consumers become aware of them. Or you may want to get involved in ____________ goods by becoming a trucker.

Agri-business could not get along without ____________. Occupations in this are include bankers, accountants, land appraisers, and lawyers.

There are many possible careers in the area of resource management. People in this field work at jobs that ensure Alberta's ____________ are not damaged. They monitor pollution levels, conduct environmental impact studies, and control industrial development.

As for future trends in agricultural production, one of the clearest trends is the increased use of ____________. Another trend that goes hand in hand with the first one mentioned is that to be ____________ in the future, you will need to know how to use the new technologies. This means that to learn the latest technologies you may have to take home-study courses or take courses from a vocational school, a ____________, or a university.

Future agricultural products will likely be much like the ones currently ____________ even though they may be produced differently. ____________ will continue to demand safe, high-quality goods.

Compare your answers with those in the Appendix, Section 2: Extra Help.

Enrichment

Teamwork

k Management

1. A career in the agricultural industry can be very rewarding. In this section you learned about several careers. To enhance your knowledge, watch the video *Careers in Agriculture*. This video should provide you with further information on career possibilities. After you view the video, take some time to discuss it with a study partner.

2. One of the enrichment activities in Section 1 contains an article from the *Alberta Report* about the Alberta Food Processing Development Centre. If you haven't read this article, do so now.

   In addition to being a good place for food processors to get help, the Alberta Food Processing Development Centre provides challenging careers for many people. Contact the Food Processing Development Centre to find out what career paths are available there. Refer to Section 1: Enrichment to find out how to contact the centre. Summarize your findings in a short report.

Compare your answers with those in the Appendix, Section 2: Enrichment.

CONCLUSION

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Did you ever imagine the diverse nature of careers in the field of agriculture? In this section you discovered many possible career choices in the five sectors of agriculture: processing, marketing, support services, production, and resource management. You had the opportunity to look in greater detail at a variety of occupations in each sector. You investigated the employment trends for these occupations, as well.

You also looked at the future of agriculture. In terms of future career opportunities, there are some jobs that will increase in number and others that will decrease in number. You discovered that technology will play a large role in the future of agriculture.

This section has provided you with many choices of agricultural careers. Having alternatives may help you decide what you are interested in and what is available. Choosing a career path should now be easier using the knowledge you gained in this section.

ASSIGNMENT

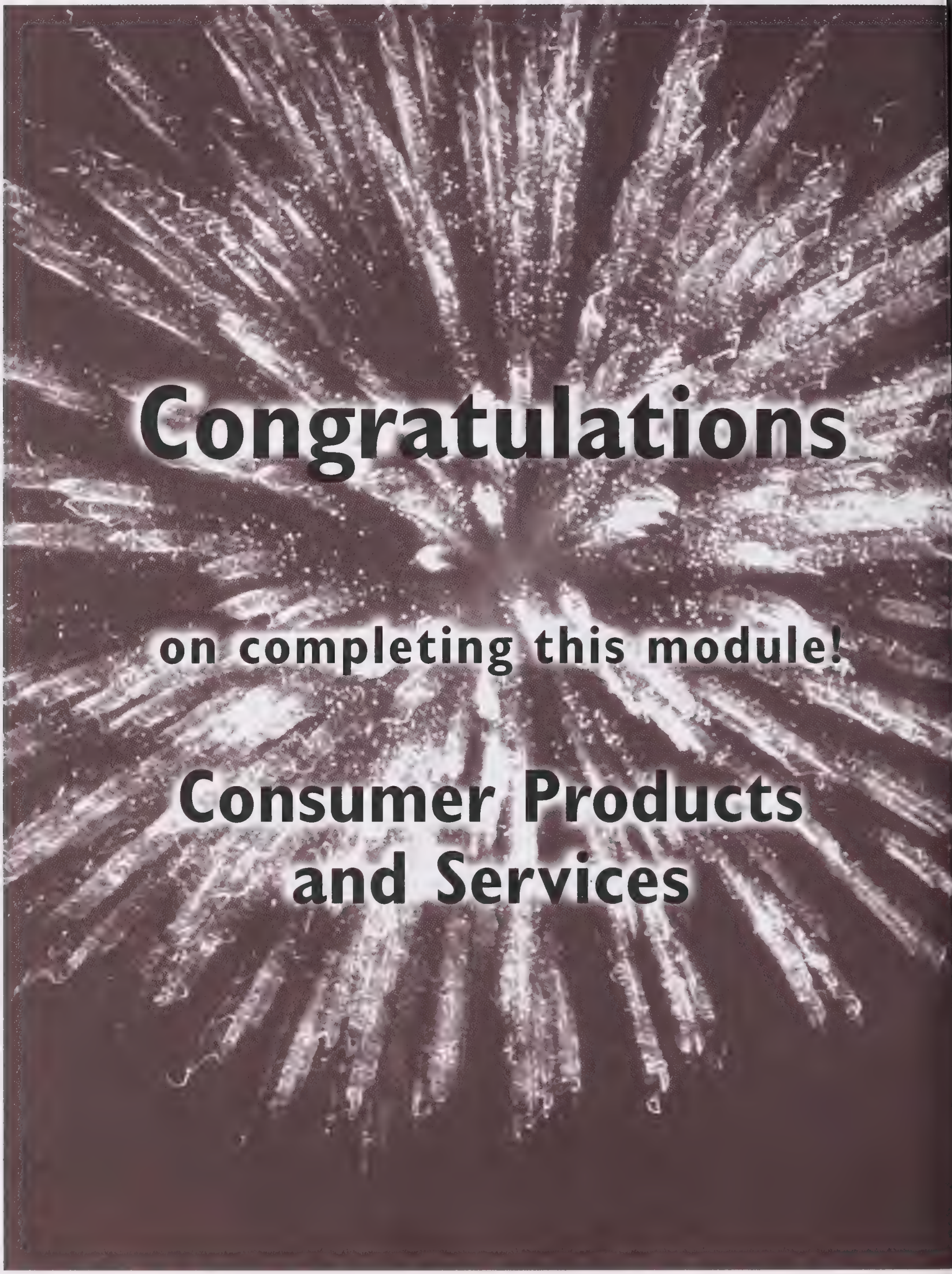
Turn to your Assignment Booklet and do the assignment for Section 2.

MODULE SUMMARY

In this module, agricultural products and services were presented in terms of development and also as career opportunities. There are many steps taken by entrepreneurs to develop products and services. Government legislation, quality and safety strategies, distribution and marketing processes, building and equipment requirements, and risk management practices must be considered in the development of consumer products and services.

Many career options involved in agriculture, and specifically in developing consumer products and services, were presented to you. You were shown the trends in agricultural careers and agricultural practices. One trend you discovered is that technology continues to play a large role in agriculture.

The next time you go shopping, think of what was involved in making those consumer products and services available to you: the processes, the resources, and the jobs. Just think—someday you may have a career involved in making those products or services available to others.



Congratulations

on completing this module!

Consumer Products and Services

COURSE SURVEY FOR CONSUMER PRODUCTS AND SERVICES
(AGR 1060)

er you have completed the assignments in this module, please fill out this questionnaire and mail it to the dress given on the last page. This module is designed in a new distance learning format, so we are erested in your responses. Your constructive comments will be greatly appreciated, as future course isions can then incorporate any necessary improvements.

me ______________________ Age ☐ under 19 ☐ 19 to 40 ☐ over 40

dress ______________________ File No. ______________________

______________________ Date ______________________

____

esign

The Student Module Booklet contains a variety of self-assessed activities. Did you find it helpful to be able to check your work and have immediate feedback?

☐ Yes ☐ No If yes, explain.

____

____

____

Were the questions and directions easy to understand?

☐ Yes ☐ No If no, explain.

____

____

3. Each section contains Follow-up Activities. Which type of Follow-up Activity did you choose?

   ☐ mainly Extra Help
   ☐ mainly Enrichment
   ☐ a variety
   ☐ none

   Did you find these activities beneficial?

   ☐ Yes ☐ No If no, explain.

   ____

   ____

4. Did you understand what was expected in the Assignment Booklet?

   ☐ Yes ☐ No If no, explain.

   ____

   ____

5. The course materials were designed to be completed by students working independently at a distance. We you always aware of what you had to do?

   ☐ Yes ☐ No If no, provide details.

   ____

   ____

6. This distance learning course may include an assortment of drawings, photographs, and charts.

   a. Did you find the visuals in this course helpful?

      ☐ Yes ☐ No Comment on the lines below.

      ____

      ____

   b. Did you find the variety of visuals in this course motivating?

      ☐ Yes ☐ No Comment on the lines below.

      ____

      ____

Suggestions for audiocassette, videocassette, and computer activities may have been included in the course. Did you complete these media activities?

☐ Yes ☐ No Comment on the lines below.

nly students enrolled in a Junior High course need to complete the following question.

The Student Module Booklet may have directed you to work with your learning facilitator. How well did you work as a team?

Student's comments:

Learning facilitator's comments:

ourse Content

1. Was enough detailed information provided to help you learn the expected skills and objectives?

☐ Yes ☐ No Comment on the lines below.

2. Did you find the work load reasonable?

☐ Yes ☐ No If no, explain.

3. Did you have any difficulty with the reading level?

☐ Yes ☐ No Please comment.

4. How would you assess your general reading level?

☐ poor reader ☐ average reader ☐ good reader

5. Was the material presented clearly and with sufficient depth?

☐ Yes ☐ No If no, explain.

General

1. What did you like least about the course?

2. What did you like most about the course?

Additional Comments

ly students enrolled with the Alberta Distance Learning Centre need to complete the remaining estions.

Did you contact the Alberta Distance Learning Centre for help or information while doing your course?

☐ Yes ☐ No If yes, approximately how many times? ______

Did you find the staff helpful?

☐ Yes ☐ No If no, explain.

Were you able to fax any of your assignment response pages?

☐ Yes ☐ No If yes, comment on the value of being able to do this.

If you mailed your assignment response pages, how long did it take for their return?

Was the feedback you received from your correspondence or distance learning teacher helpful?

☐ Yes ☐ No Please comment.

hanks for taking the time to complete this questionnaire. Your edback is important to us. Please return this questionnaire to e address on the right.

you are enrolled at the Alberta Distance Learning Centre and ill be mailing your Assignment Booklet to ADLC, you may turn this questionnaire with the Assignment Booklet.

Instructional Design and Development
Learning Technologies Branch
Box 4000
Barrhead, Alberta
T7N 1P4

APPENDIX

Glossary
Suggested Answers
Contacts
Occupational Classifications

Glossary

advertising: paid announcements informing consumers about products or services

agri-businesses: enterprises involved in producing, processing, storing, or marketing agricultural commodities

agrologists: experts in the growing of plants or animals

business plan: planning tool used to get a clearer vision of a proposed business venture

capital: money and goods brought together to produce other goods

collateral:property pledged by a borrower to protect the interests of the lender

commodities: products of agricultural production; e.g., wheat

consumer products: processed goods that are ready for use by people

consumers: people who buy or use products

design: preliminary sketch or plan

differentiate: recognize differences between things

durable goods: things that last a long time without spoiling

entrepreneurs: people who start and operate their own businesses

finished goods: consumer products that are ready for market

grading: assigning ranks or levels to products based on characteristics like size, condition, quality, texture, colour, or appearance

inputs: components of production like raw materials, energy, land, and labour

mechanization: the replacement of human and animal power by machines

packages: containers surrounding a consumer good

parasites: organisms that live in or on other organisms drawing sustenance from their host either by sucking blood or ingesting other bodily fluids

patent: a document issued to inventors giving them exclusive rights to make, use, or sell their inventions

pathogens: viruses or bacteria that cause diseases

perishables: things that spoil quickly

pesticides: chemicals used to kill weeds or insect pests

profit: the excess of revenues over expenses

quality-control program: a set of activities designed to ensure adequate quality of finished products

robots: computer-guided machines used to do routine work

robotics: the study of the design and use of robots

uniformity: sameness

urban: pertaining to cities or towns

viable: capable of growing or developing

uggested Answers

ection 1: Activity 1

Having a fresh water supply in a processing plant is important because water is used to clean raw materials, equipment, and processing areas. It may even be needed as an ingredient for the finished goods. In some processes, it is used in heating or cooling products or machines.

All processors have an obligation to clean the water they use. Water containing contaminants that is returned to the environment could harm plant life, animals, or people. Contaminants include things like heavy metals and toxins. Even heat could be considered a contaminant because it alters the natural balance of local water bodies.

Locating a processing facility near a supply of raw materials saves time and money. It saves time because it takes less time to get raw materials from local suppliers than from those further away. It saves money because the closer suppliers are, the lower the shipping costs are. It may reduce the need for large storage facilities on the plant site because raw materials can be readily obtained from local sources.

a. marketing plan
b. business purpose
c. operating plan
d. marketing plan
e. business purpose
f. financial plan
g. operating plan
h. marketing plan
i. financial plan
j. business purpose
k. operating plan
l. marketing plan
m. operating plan
n. financial plan
o. marketing plan
p. business purpose
q. financial plan

A well-trained work force is the most valuable asset a business has. If a employee is injured, it costs the company in several ways, e.g., downtime, retraining, and increased insurance rates. If the injury was caused by the company's negligence, the worker also may successfully sue the company for damages.

Another important consideration is consumer safety. A company cannot survive if its products are unsafe to use. Consumers refuse to buy unsafe products, and governments forbid the sale of unsafe products. In addition, should consumers be injured after using a faulty product, they may successfully sue the company for damages. Such a case would financially injure the company and tarnish its reputation.

It is important to have environmental-control measures in place to make sure the business does not pollute air, water, or land. There are several negative consequences of polluting. First, the business's image will be tarnished. This will translate into lower sales. Second, polluting local resources could mean the plant would have to move or clean up the pollution. Both propositions are costly. Third, pollution is an assault on the health of plant workers and potential workers living in the area. It could mean reduced labour resources, and affected people could sue the processor for damages. It is in the best interest of the processing plant to set up monitoring systems for quality, safety, and environmental protection. These systems ensure the business will continue to prosper.

Accurate, up-to-date records are needed to

- judge past performance of a business
- determine if the business is profitable
- determine the business's current position
- identify the business's strengths and weaknesses
- plan for the future
- file government reports

7. Formulating the Idea → Preparing the Plan (business purpose, marketing plan, operating plan, and financial plan) → Meeting Safety Standards → Implementing the Plan (test period and full-scale operatio

Section 1: Activity 2

1. Health Canada inspectors inspecting a small meat-processing operation would be looking for

    - proper storage containers for unprocessed meat
    - proper storage temperatures for unprocessed and processed meats
    - general cleanliness of the plant
    - hygiene of the workers
    - cleanliness of machines
    - possible avenues for pathogens to enter the finished product during processing
    - approval stamps on all unprocessed meats
    - evidence of rodent or insect infestations
    - proper packaging and labelling procedures
    - proper storage facilities for finished goods

2. Safety standards would probably be the most important standards when testing a new food dehydrator. Following that would be performance standards and quality standards.

3. When it comes to things that are tested and approved by the CSA, you could compile a fairly long list. He are a few items you may have included: light bulbs, toasters, refrigerators, microwave ovens, televisions, radios, stereo systems, toys, smoke detectors, sports equipment, bathroom fixtures, computer equipmen and heating pads.

4. You should find that all labels on the items you examine have the characteristics mentioned in this activit and that they do conform to the law.

5. Here are some reasons you might have for standardizing information on labels:

    - to inform people of the contents of packages
    - to allow consumers to compare products: quantity, quality, size, etc.
    - to provide consumers with the name of the manufacturer so they can contact the manufacturer
    - to warn people about potential hazards of using the product
    - to instruct people on the proper use of products
    - to give assurance to consumers that the products are safe to use

6. a. If you were going to create a system for grading chocolate chips cookies you might use these criteria

        - number of chocolate chips per cookie
        - hardness
        - colour
        - size
        - taste
        - nutritional value
        - packaging

    b. Your system might set minimum standards for each criteria and any cookie that passed the minimum standard on all points would be rated A. Those that missed on one point would be rated B; one that missed the standard on two criteria would be rated C; and so on.

ection 1: Activity 3

Some of the following may be consequences of not having a quality-control program for a food-processing plant:

- Poor raw materials may be used.
- Finished products may be contaminated by such things as dirt, animal droppings, grease, or oil.
- Pathogens and parasites may breed in the processing plant and infect finished goods.
- Processed goods may not be cured properly, allowing pathogens and parasites to thrive in finished goods.
- Raw materials and finished goods may spoil.
- Safety procedures may not be followed by staff, making it possible for accidents to happen or contaminants to enter foods.
- Consumers may be harmed by contaminated foods.
- The company could be sued by injured parties and suffer financially.
- The company could gain a bad reputation and lose business.

Your answers to this question will vary somewhat depending on the products you chose. However, there are a few generalities that apply to most high-quality products. If you chose a food item, you might have listed the following features.

- labelled properly
- meets safety standards
- tastes good
- provides energy and nutrition
- designed well
- has quality inputs
- has uniform characteristics from product to product

If you chose a non-food item you may have said it was

- designed well
- safe to use
- constructed well, with high-quality parts
- long lasting
- able to do the job you wanted it to do

Product design is important to producing a high-quality product because the product's design is the starting point for manufacturing the product. It lists ingredients that must go into making the product and provides instructions on how to put the ingredients together. If the design is incorrect or faulty in any way, then the product will be faulty.

Take, for example, the making of doughnuts. The design for doughnuts is a recipe. If the recipe calls for baking soda instead of baking powder, then the end product will be flat and heavy rather than soft and light. Few people would be interested in buying a flat, heavy doughnut.

Having a quality-control program can be expensive, but not having one can be even more expensive. As pointed out in answers to earlier questions, quality control is an important function for processors. Without it they run the risk of harming workers, the environment, or consumers.

The consequences of producing poor-quality products can be severe. Processors can lose money, sales, and their reputations by producing poor-quality goods. They may even lose their businesses.

Section 1: Activity 4

1. It is important to advertise a product for several reasons. Advertising makes consumers aware that products exist. It persuades consumers to purchase products. It is a way of promoting the company making the product, and it can be used to develop brand loyalty.

2. a.–e. Did you do everything that was asked for? Your answers will vary depending on the product you chose to advertise. However, there are certain things that must come through no matter what you were advertising or what medium you chose to use. The product you are advertising should be clearly identified. The message about your product should be positive.

3. An effective transportation system is a key element in marketing agricultural goods because it reduces shipping charges. This benefits both processors and consumers. Processors can easily get raw materials reasonable rates, and they can cheaply ship the goods to sales points. Their savings are passed on to consumers who end up paying reasonable prices for the goods they consume.

   A good transportation system also means that producers, making many different products, can operate i almost any town or city. Again, consumers benefit because they can choose from a wide selection of products no matter where they live.

4. Large amounts of commodities are most efficiently shipped by train or ship. These modes of transportation can carry large volumes of goods at reasonable rates.

5. Products that spoil easily are generally shipped by truck or airplane. Trucking is less expensive than usi an airplane, but it takes longer to move the goods. Airplanes are used for fragile items with a very short life span.

6. Refrigeration helps keep agricultural products from spoiling. It cools the products, which slows down th buildup of pathogens and the decay process. This means that foods such as fresh meats can be stored fo extended periods of time in the summer. It also means that things like cut flowers can be transported many miles. Cut flowers are regularly flown from one country to another using specially refrigerated planes.

Section 1: Activity 5

1. Answers will vary depending on the processing plant you envisage. Compare your list to the following:

   - building
   - land
   - machinery
   - signs
   - loading areas
   - roads
   - parking lots
   - office equipment
   - electricity supply
   - water supply
   - people
   - warehouses/storage facilities
   - raw materials inventory
   - finished goods inventory
   - communications systems
   - quality control systems
   - washrooms
   - computer systems
   - heating systems

2. A computerized robotics system is more cost effective than human workers for the following reasons:

   - You do not have to pay wages or benefits to robots.
   - Robots can work 24 hours a day.
   - Robots rarely make mistakes.
   - Robots do not require holidays.
   - A robot can handle heavier, hotter, or more toxic materials than a human.
   - A handful of technicians can look after a mechanized plant.

   These points add up to cost savings for processors.

Without proper maintenance and repair, your processing plant would no longer operate efficiently and you would lose time and money.

By not seeking to improve your facilities, you run the risk of falling behind your competition. New technologies often result in better ways of doing things: faster, more accurate, more efficient, or more economical. Not taking advantage of new technologies could slowly drain your business of profit.

ection 1: Activity 6

ere are a few examples of *what if* scenarios and solutions concerning a cookie-manufacturing plant:

- What if my suppliers can't deliver the flour on time?

  Solution: I should have a second supplier as a back-up or I should buy larger lots of flour so I won't run out if a shipment is missed.

- What if my cookies are damaged as they are transported to the retail store?

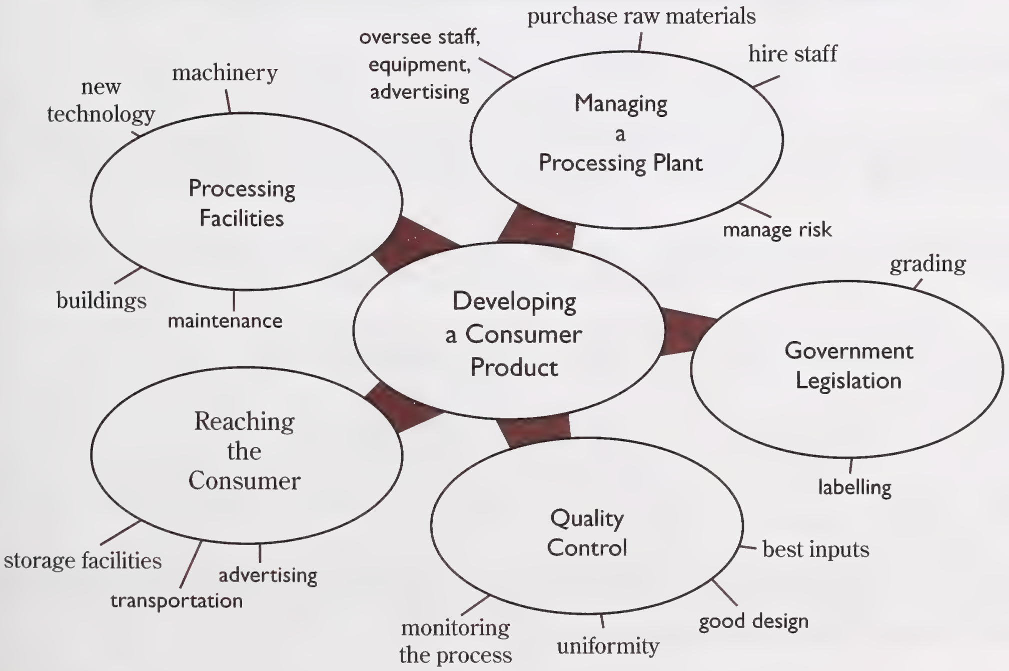
  Solution: I should have the cookies insured while they are transported so I do not suffer a financial loss. Also I should have a refund policy in place for consumers who buy damaged cookies.

- What if consumers really like my cookies and my sales are double what I expected?

  Solution: My plant should be designed in such a way that if I need to expand or add more equipment I have the space.

ection 1: Follow-up Activities

xtra Help



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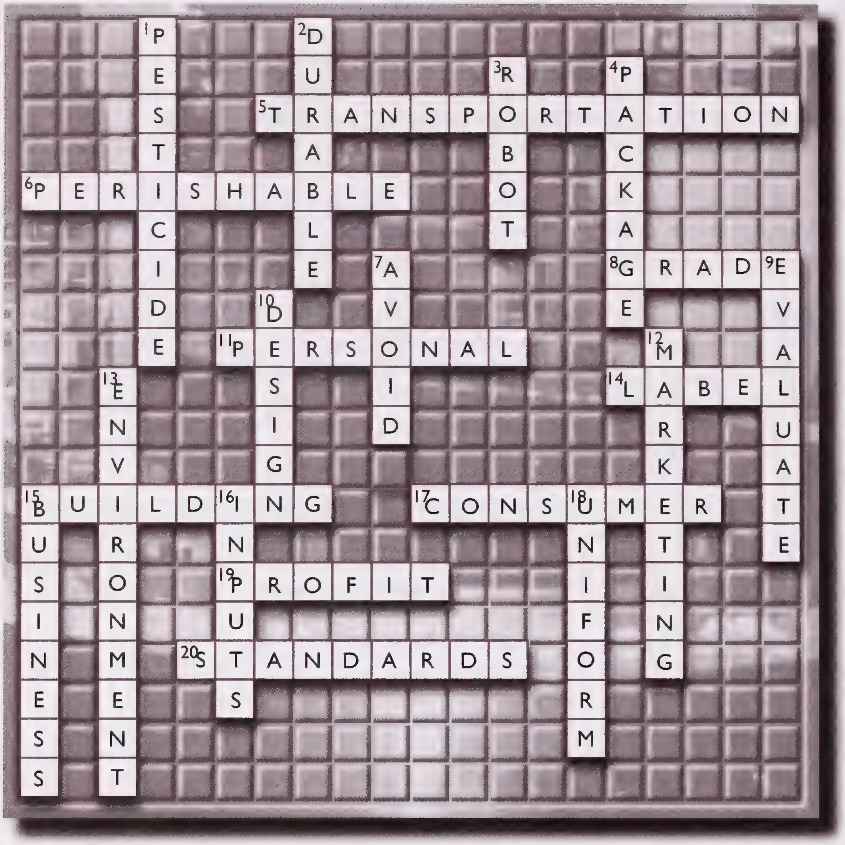

Enrichment

1. Have you ever visited a meat-processing plant? If you have, was it set up like the one in the video? Were you impressed by the quality-control measures used by the meat-processing operation shown in the vide Do you have a better appreciation of where processed meat comes from? Did any of the jobs depicted in the video interest you?

2. This question was designed to help you learn more about consumer products and how to find out more about them. Did you find out something interesting? If you did, be sure to share it with family or friends.

3. There are so many products to look at and many have interesting packages. Did you notice anything unusual about packages? Did you notice some similarities between packages?

4. This should have been a fun activity for you. You could use your imagination to produce a colourful package. Did you remember to include all the elements required by law?

5. Were you able to interview someone? If so, were you surprised by what you learned? Has the Alberta Foo Processing Centre changed since the article was written?

   Were you careful to be courteous when setting up and conducting your interview? If a business person is willing to take the trouble to talk with you, it's very important to show your appreciation by being polite and punctual and by having questions well prepared in advance.

ction 2: Activity 1

Here are just a few sample careers or jobs in each sector with which you can compare your own ideas. Of course, there are many possibilities.

a. processing sector: baker, dietitician, equipment-maintenance person, research scientist, lab technician, feed-mill manager

b. marketing sector: graphic artist, copywriter, auctioneer, salesperson for agricutural products, grain buyer, truck driver, dispatcher for transport company

c. production sector: agricultural engineer, dairy farmer, grain farmer, poultry farmer, market gardener, greenhouse operator, researcher, lab technician

d. support services sector: financial advisor, accountant, real estate agent, maintenance person, welder, lawyer, agricultural consultant

e. resource management sector: agricultural fieldman, weed inspector, brand inspector

It is hoped that you had a pleasant meeting with the person you interviewed and that you learned more about the position you were interested in pursuing. If you happened to choose a food-processing technician working in a perogy factory, this is what he or she may have told you:

- The day-to-day activities of a food-processing technician include cleaning machinery, preparing machinery for operation, testing raw materials for quality, feeding raw materials into machines, drawing partially processed goods from machines and moving them on for further processing, testing quality of processed goods, recording production statistics, packaging and shipping finished goods, and attending production meetings.

- The salary range for a food-processing technician is from $11 to $15 an hour, depending on experience.

- Qualifications for a food-processing technician's position are a high school diploma, mechanical aptitude, a good work ethic, stringent personal hygiene, and good health.

- The service a food-processing technician provides to the agriculture industry is to combine agricultural commodities, like potatoes and onions, and partially processed food products, like flour, sugar, and cheese, to make a product consumers will want.

- Food-processing technicians are encouraged to learn new aspects about their work through on-the-job training, workshops, seminars, and personal-development courses.

- Some food-processing technicians like working with machines and are interested in applying the latest technology to their work. Others enjoy completing tasks and meeting production deadlines. What many food-processing technicians enjoy is working as a team to accomplish a common goal.

- Changes predicted for food processing over the next five years include automation. The use of robots to accomplish tasks is a growing phenomenon. Automation increases production capabilities, and at the same time it increases product quality.

  This means that food-processing technicians will have to be even better trained. They will have to know how to program machines to accomplish tasks and they may also be called on to service those machines. There will likely be less physical work and more mental work involved.

3. Marketing is the career cluster expected to experience a steady growth in jobs into the near future. Ma of these jobs will be at the entry level.

Section 2: Activity 2

1. The time line you prepared of your plans may not be a blueprint for your future; it may just be another t to use in order to get where you want to be. It is hoped that thinking about your future and being aware the possible careers in agriculture will help you along your way.

2. Your answer to this question should be realistic. For example, you may have mentioned that you envisio automated quality-control systems being in place in the next ten years. The systems will be operated by computers and use laser or x-ray technology to detect defective products. The defective products will be picked out by robots and used for other commercial purposes.

3. Your answer here is limited only by your imagination. How about edible plates and utensils? No more di dishes—you eat your supper and your dishes at the same time.

Section 2: Follow-up Activities

Extra Help

Activities in agriculture can be divided into five different sectors: processing, **marketing**, support services, **production**, and **resource** management. You may find a challenging and rewarding career in any one of the sectors.

In the processing sector there are a number of job opportunities. You may be interested in becoming a **technician**, who operates some of the processing machines, or you may wish to become a **food scientist** s you can research new food products. You may even want to be an **entrepreneur** and start your own busines

If you are interested in marketing agricultural products, you can do a number of things. You may be interest in **advertising** products so consumers become aware of them. Or you may want to get involved in **distributing** goods by becoming a trucker.

Agri-business could not get along without **support services**. Occupations in this area include bankers, accountants, land appraisers, and lawyers.

There are many possible careers in the area of resource management. People in this field work at jobs that ensure Alberta's **natural resources** are not damaged. They monitor pollution levels, conduct environmenta impact studies, and control industrial development.

As for future trends in agricultural production, one of the clearest trends is the increased use of **technology** Another trend that goes hand in hand with the first one mentioned is that to be **employable** in the future, y will need to know how to use the new technologies. This means that to learn the latest technologies you ma have to take home-study courses or take courses from a vocational school, a **college**, or a university.

Future agricultural products will likely be much like the ones currently **enjoyed** even though they may be produced differently. **Consumers** will continue to demand safe, high-quality goods.

Enrichment

1. Viewing the video *Careers in Agriculture* should broaden your perspective of what jobs are available to y Discussing the video with someone you know will help clarify your views on agriculture as a possible career avenue.

2. What did you learn about the kinds of jobs that are carried out at the Food Processing Development Centre? Is there a career path there that interests you?

ontacts

echnical Institutes

The Registrar's Office
Northern Alberta Institute of Technology (NAIT)
11762 – 106 Street
Edmonton, Alberta
T5G 3H1
Tel: (403) 471-6248
Toll Free: 1-800-661-4077
Fax: (403) 471-8583
URL: www.nait.ab.ca

The Admissions Office
Southern Alberta Institute of Technology (SAIT)
1301 – 16 Avenue NW
Calgary, Alberta
T2M 0L4
Tel: (403) 282-7114
Fax: (403) 281-8940
E-mail: dale.landry@sait.ab.ca
URL: www.sait.ab.ca

ocational Centres

Admissions
Alberta Vocational College
Downtown Campus
10215 – 108 Street
Edmonton, Alberta
T5J 1L6
Tel: (403) 427-2741
Fax: (403) 427-5465
E-mail: INFO@AVC.Calgary.ab.ca

Alberta Vocational College (Calgary)
332 – 6 Avenue SE
Calgary, Alberta
T2G 4S6
Tel: (403) 297-3930
Fax: (403) 297-4081
E-mail: INFO@AVC.Calgary.ab.ca

Alberta Vocational College (Lac La Biche)
P.O. Box 417
Lac La Biche, Alberta
T0A 2C0
Tel: (403) 623-5551
Fax: (403) 623-5639

- Alberta Vocational College (Lesser Slave Lake)
  1201 Main Street SE
  Slave Lake, Alberta
  T0G 2A3
  Tel: (403) 849-8611

Colleges

- Admissions Advisor
  *Olds College
  4500 – 50 Street
  Olds, Alberta
  T4H 1R6
  Tel: (403) 556-8281
  Fax: (403) 556-4711

- The Registrar's Office
  *Fairview College
  Box 3000
  Fairview, Alberta
  T0H 1L0
  Tel: (403) 835-6605
  Fax: (403) 835-6698
  E-mail: sroy@fairviewc.ab.ca

- The Registrar
  *Lakeland College
  Bag 5100
  Vermilion, Alberta
  T0B 4M0
  Tel: (403) 853-8400
  Fax: (403) 853-7355

- The Registrar
  Grande Prairie Regional College
  10726 – 106 Avenue
  Grande Prairie, Alberta
  T8V 4C4
  Tel: (403) 539-2944 or 1-888-539-GPRC
  Fax: (403) 539-2888

- Administration Office, City Centre Campus
  Grant MacEwan Community College
  10700 – 104 Avenue
  Edmonton, Alberta
  T5J 4S2
  Tel: (403) 497-5401
  Fax: (403) 497-5405
  URL: www.gmcc.ab.ca

- The Registar
  Keyano College
  8115 – Franklin Avenue
  Fort McMurray, Alberta
  T9H 2H7
  Tel: (403) 791-4800
  Fax: (403) 791-1555

- The Registar
  Lethbridge Community College
  3000 College Drive, South
  Lethbridge, Alberta
  T1K 1L6
  Tel: (403) 320-3200
  Fax: (403) 320-1461

- Counselling/Career Information
  Medicine Hat College
  299 College Drive, SE
  Medicine Hat, Alberta
  T1A 3Y6
  Tel: (403) 529-3819
  Fax: (403) 526-1915

- Admissions Advising Centre
  Office of the Registrar
  Mount Royal College
  4825 – Richard Road SW
  Calgary, Alberta
  T3E 6K6
  Tel: (403) 240-6111
  Fax: (403) 240-5938
  E-mail: dkoop@mtroyal.ab.ca

- Registrar
  Prairie Bible College & Graduate School
  P.O. Box 4000
  Three Hills, Alberta
  T0M 2N0
  Tel: (403) 443-5511
  Toll Free: 1-800-661-2425
  Fax: (403) 443-5540

- The Registrar's Office
  Red Deer College
  56 Avenue & 32 Street
  P.O. Box 5005
  Red Deer, Alberta
  T4N 5H5
  Tel: (403) 342-3300
  Fax: (403) 340-8940

*Agricultural Colleges

Universities

- Office of the Registrar and Student Awards
  The University of Alberta
  Edmonton, Alberta
  T6G 2M7
  Tel: (403) 492-3113
  E-mail: registrar@ualberta.ca
  URL: www.ualberta.ca/

- Office of the Registrar
  Athabasca University
  Box 10 000
  Athabasca, Alberta
  T9S 1A1
  Tel: (403) 675-6434
  Toll Free: 1-800-788-9041
  URL: www.athabascau.ca

- Director of Admissions
  Registrar's Office
  The University of Calgary
  2500 University Drive NW
  Calgary, Alberta
  T2N 1N4
  Tel: (403) 220-6645
  URL: www.ucalgary.ca

- Registrar's Office
  University of Lethbridge
  4401 University Drive W
  Lethbridge, Alberta
  T1K 3M4
  Tel: (403) 320-5700
  E-mail: www@www.uleth.ca
  URL: home.uleth.ca

- Registrar
  Augustana University College
  4901 – 46 Avenue
  Camrose, Alberta
  T4V 2R3
  Tel: (403) 679-1100
  Fax: (403) 679-1129
  URL: www.augustana.ab.ca

ccupational Classifications

he following information is from the *National Occupational Classification: Occupational Descriptions.*[1] The ccupations described are related to producing consumer products and services.

e occupations are numbered and they appear in numerical order.

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uman Resources Development Canada, *National Occupational Classification: Occupational Descriptions.* Reproduced with the mission of the Minister of Public Works and Government Services Canada, 1997.

0122 Banking, Credit and Other Investment Managers

Banking, Credit and Other Investment Managers plan, organize, direct and control the activities of financial establishments or operational departments within such establishments, or credit departments in industrial and commercial establishments. Banking managers are employed by banks, trust companies and credit unions. Credit managers are employed by credit departments in department stores, utility companies, car dealerships, insurance companies or other industrial or commercial organizations. Other investment managers are employed by credit card companies, consumer loan companies, mutual fund investment firms, mortgage investment companies or other financia establishments concerned with extending loans and financing and investments.

Examples of titles classified in this unit group

Bank Manager
Collection Centre Manager
Commercial Banking Manager
Corporate Banking Centre Manager
Credit and Accounts Manager
Credit Union Manager
Manager, Credit Card Centre
Manager, Banking Operations
Mortgage and Consumer Credit Manager
Operations Manager, Credit Card Company
Regional Credit Manager
Trust Company Manager

Main duties

Banking managers perform some or all of the following duties:

- Plan, organize, direct and control the branch operations of a bank, trust company, credit union or similar financial institution or of a department in such an institution responsible for administering personal and commercial loans, accepting deposits, buying and selling securities, operating investment funds, administering trusts, settling estates or other related activities
- Ensure the institution's policies and procedures are followed according to established guidelines and make recommendations for improvement
- Promote the sale of loan, investment and other banking services to attract corporate and individual customers
- Interview corporate and individual customers and respond to customer enquiries
- Analyze, review and approve or reject loan and credit applications
- Monitor processing of loan applications and credit investigations
- Oversee preparation of monthly financial and branch progress reports
- Recruit personnel and oversee their training

Credit managers perform some or all of the following duties:

- Plan, organize, direct and control the activities of a credit department in an industrial or commercial organization
- Administer corporate, commercial and personal loan accounts
- Evaluate and review loan and credit applications
- Approve or reject credit applications, establish credit limits and determine repayment plans or schedules
- Ensure collection of overdue or delinquent accounts
- Ensure credit policies and procedures are followed according to established guidelines
- Prepare credit and loan reports
- Recruit credit personnel and oversee their training

Employment requirements

- A university degree or college diploma in business administration, commerce, economics or a related fie is usually required.
- Completion of company or other management trainin programs is usually required.
- Several years of experience within the industry, including supervisory experience, are required.

Additional information

- Progression to senior management positions in this f is possible with experience.

Classified elsewhere

- Mortage brokerage managers (in 0121 *Insurance, Re Estate and Financial Brokerage Managers*)
- *Other Business Services Managers* (0123)
- *Senior Managers—Financial, Communications Carri and Other Business Services* (0013)

12 Government Managers in Economic Analysis, Policy Development and Program Administration

overnment managers in this unit group plan, organize, direct, and control economic policy, research and programs in eas of government activity such as taxation, international trade, labour markets, transportation or agriculture. They also an and direct policies and programs to promote industrial and commerical business development in urban and rural eas. They are employed in government departments and agencies.

amples of titles classified in this unit group

ief, Economic Analysis
ief, Forest Resource Analysis
stoms Manager
rector, Business Development
rector, Economic Development
rector, Economic Policy Analysis
rector, Energy Market Analysis
rector, Excise-tax Programs
Director, Farm Products Marketing
Manager, Grain Market Analysis
Manager, Tax Policy Research
Manager, Revenue Programs
Taxation Manager
Tourism Development Director
Trade Development Director

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ain duties

vernment managers in economic analysis and program ministration perform some or all of the following duties:

Plan, organize, direct and control the development of economic policy research projects and economic programs

Participate in the development of departmental policies by providing advice to senior government managers

Organize departmental unit and establish procedures to meet departmental objectives set by senior management

Direct and advise economists and other professional staff who conduct economic research, prepare reports or administer programs in areas of government activity such as taxation, international trade, labour, transportation or agriculture

Direct and advise economic development officers or other staff administering programs to promote industrial and commercial business investment in urban or rural areas

Plan, administer and control research and administration budgets for projects, support services, equipment or supplies

Organize and direct committees evaluating departmental or agency projects or programs

Interview, hire and oversee training and professional development

Employment requirements

- A bachelor’s degree in economics, business administration, commerce or public administration is required.
- A master’s degree in economics or a related field may be required.
- Several years of experience as an economist, economic development officer or socio-economic researcher are required.

Additional information

- Progression to senior management positions is possible with experience.

Classified elsewhere

- *Economic Development Officers and Marketing Researchers and Consultants* (4163)
- *Economists and Economic Policy Researchers and Analysts* (4162)
- *Financial Managers* (0111)
- *Government Managers in Health and Social Policy Development and Program Administration* (0411)
- *Senior Government Managers and Officials* (0012)
- Labour policy analysts (in 4164 *Social Policy Researchers, Consultants and Program Officers*)

0611 Sales, Marketing and Advertising Managers

Sales, Marketing and Advertising Managers plan, organize, direct and control the activities of establishments and departments involved in commercial, industrial and wholesales sales, marketing, advertising and public relations. They are employed by commercial, industrial and wholesale establishments, marketing and public relations consulting companies and by government departments.

Examples of titles classified in this unit group

Advertising Director
Corporate Sales Manager
Director, Communications
Director, Public Relations
Fund Raising Campaign Manager
Manager, Media Relations
Marketing Manager
Promotions Manager
Regional Sales Manager
Sales and Marketing Manager
Sales Director (Except Retail)

Main duties

The following is a summary of main duties for some occupations in this unit group:

- Sales managers plan and direct the activities of sales departments in commercial, industrial, wholesale and other non-retail establishments.
- Marketing managers establish distribution networks for products and services, initiate market research studies and analyze their findings, assist in product development, and direct the marketing strategies of establishments.
- Advertising managers plan and direct the activities of firms and departments that develop and implement advertising campaigns to promote the sales of products and services.
- Public relations managers direct establishments and departments that develop and implement communication strategies and information programs, publicize activities and events, and maintain media relations on behalf of businesses, governments and other organizations.

Employment requirements

- Sales and marketing managers require a university degree or college diploma in business administration in a related field with a specialization in sales or marketing
  and
  Several years of experience as a sales or marketing representative or in a related occupation.
- Advertising and public relations managers require a university degree or college diploma in public relation communications, marketing, journalism or in a relate field
  and
  Several years of experience as an advertising officer, public relations officer, communications officer or in related occupation.

Additional information

- Progression to senior management positions is possib with experience.

Classified elsewhere

- *Professional Occupations in Public Relations and Communications* (5124)
- *Retail Trade Managers* (0621)
- *Retail Trade Supervisors* (6211)
- *Senior Managers—Trade, Broadcasting and Other Services, n.e.c.* (0015)

11 Manufacturing Managers

nufacturing Managers plan, organize, direct and control the operations of a manufacturing establishment or of a duction department within a manufacturing establishment, under the direction of a general manager or other senior nager. They are employed by manufacturing companies.

amples of titles classified in this unit group

tomobile Production Manager
thing Factory Manager
iry Plant Manager
stillery Manager
ctory Superintendent
undry Manager
nufacturing Manager
Operations Manager, Manufacturing
Paper Mill Manager
Plant Manager, Manufacturing
Printing Plant Manager
Production Manager, Manufacturing
Textile Mill Manager
Tire Plant Manager

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in duties

nufacturing Managers perform some or all of the owing duties:

lan, organize, direct and control the operations of a nanufacturing establishment or the operations or roduction department of a manufacturing stablishment

evelop and implement plans to efficiently use naterials, labour and equipment to meet production argets

lan and manage the establishment or departmental udget

evelop production schedules and maintain an nventory of raw materials and finished products

lan and implement changes to machinery and quipment, production systems and methods of work

irect quality control inspection system and develop roduction reporting procedures

evelop equipment maintenance schedules and ecommend the replacement of machines

rain or oversee training of employees in the use of new quipment or production techniques

Employment requirements

- Completion of a college or university program in engineering or business administration is usually required.
- Five to ten years of supervisory experience in manufacturing are required.

Additional information

- Progression to senior management positions is possible with experience.

Classified elsewhere

- *Facility Operation Managers* (0721)
- *Maintenance Managers* (0722)
- *Senior Managers—Goods Production, Utilities, Transportation and Construction* (0016)
- *Transportation Managers* (0713)
- *Utilities Managers* (0912)

1111 Financial Auditors and Accountants

Financial auditors examine and analyze the accounting and financial records of individuals and establishments to ensure accuracy and compliance with accounting procedures. Accountants plan, organize and administer accounting systems fo individuals and establishments. Articling students in accounting firms are included in this unit group. Financial Auditors and Accountants are employed by auditing and accounting firms throughout the private and public sectors or they may self-employed.

Examples of titles classified in this unit group

Accountant
Chartered Accountant (C.A.)
Certified General Accountant (C.G.A.)
Certified Management Accountant (C.M.A.)
Financial Auditor
Internal Auditor

Main duties

Financial auditors perform some or all of the following duties:

- Examine and analyze journal and ledger entries, bank statements, inventories, expenditures, tax returns and other accounting and financial records, documents and systems of an individual, department, company or other establishment to ensure financial recording accuracy and compliance with established accounting standards, procedures and internal controls
- Prepare detailed reports on audit findings and make recommendations to improve individual or establishment's accounting and management practices
- Conduct field audits of businesses to ensure compliance with provisions of the Income Tax Act, Canadian Business Corporations Act or other statutory requirements
- May supervise other auditors

Accountants perform some or all of the following duties:

- Plan, set up and administer accounting systems and prepare financial information for an individual, department, company or other establishment
- Examine accounting records and prepare financial statements and reports
- Develop and maintain cost finding, reporting and internal control procedures
- Examine financial accounts and records and prepare income tax returns from accounting records
- Analyze financial statements and reports and provide financial, business and tax advice
- May act as a trustee in bankruptcy proceedings
- May supervise articling students or other accountants

Employment requirements

- Chartered accountants require a university degree
  and
  Completion of a training program approved by the Institute of Chartered Accountants and several years o on-the-job training
  and
  Accreditation by the Institute of Chartered Accountant
- Certified general accountants and certified manageme accountants require completion of secondary school a usually require some post-secondary education related to accounting
  and
  Completion of a training program approved by the Society of Certified General Accountants or Society of Management Accountants and several years of on-the-job training
  and
  Accreditation by the Certified General Accountants Association or the Society of Management Accountant
- Auditors require education, training and accreditation indicated for chartered accountants, certified general accountants or certified management accountants
  and
  Some experience as an accountant.
- Auditors may require accreditation by the Institute of Internal Auditors.
- To act as a trustee in bankruptcy proceedings, auditor and accountants must hold a license as a trustee in bankruptcy.
- Licensure by the provincial or territorial governing bo is usually required for accountants and auditors practicing public accounting.
- In Quebec, membership in the professional corporatio for accountants is mandatory.

dditional information

There is limited mobility among the three professional accounting designations (C.A., C.G.A. and C.M.A.).

Progression to auditing or accounting management positions is possible with experience.

Classified elsewhere

- *Bookkeepers* (1231)
- *Financial Managers* (0111)
- Program or other non-financial auditors (in 416 *Policy and Program Officers, Researchers and Consultants*)

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13 Securities Agents, Investment Dealers and Traders

curities agents and investment dealers buy and sell stocks, bonds, treasury bills, mutual funds and other securities for lividual investors, pension fund managers, banks, trust companies, insurance firms and other establishments. Traders y and sell stocks, bonds, commodity futures, foreign currencies and other securities at stock exchanges on behalf of vestment dealers. They are employed by investment companies, stock brokerage firms, stock and commodity exchanges d other establishments in the securities industry.

amples of titles classified in this unit group

nd Dealer
mmodities Trader
oor Trader, Commodity Exchange
vestment Dealer
utual Fund Broker
Registered Representative, Investments
Securities Sales Agent
Stock Broker
Supervisor, Registered Representatives

in duties

curities sales agents and investment dealers perform ne or all of the following duties:

Buy and sell stocks, bonds, treasury bills, mutual funds nd other securities for individual investors, pension und managers or companies such as banks, trust ompanies and insurance firms

Provide investment information and advice to clients

Review financial periodicals, stock and bond reports, business publications and other material to identify potential investments for clients

Monitor clients' investment portfolios and ensure that nvestment transactions are carried out according to ndustry regulations

ders perform some or all of the following duties:

Buy and sell stocks, bonds, commodity futures, foreign urrencies and other securities at stock exchange on behalf of investment dealers

Develop trading strategies by reviewing investment nformation and monitoring market conditions from xchange floor and through contact with trading epartments of other investment firms, pension fund nanagers and financial analysts

Make bids and offers to buy and sell securities and omplete details of sales on exchange trade tickets

Employment requirements

- A university degree or college diploma in economics, business or other discipline is usually required.
- Investment, sales or other related industry experience may substitute for post-secondary education.
- Securities sales representatives and traders require completion of industry investment and sales training programs and completion of the Canadian Securities Course and the Registered Representative Manual Exam offered by the Canadian Securities Institute.
- Specialized courses are also available for securities sales representatives and traders who want to trade in specific investment products such as securities options and futures contracts.
- Licensure by the provincial securities commission in the province of employment is required for securities agents, investment dealers and traders.

Additional information

- Progression to related management positions is possible with experience.

Classified elsewhere

- *Financial and Investment Analysts* (1112)
- *Other Financial Officers* (1114)
- Financial brokerage managers (in 0121 *Insurance, Real Estate and Financial Brokerage Managers*)

1122 Professional Occupations in Business Services to Management

This unit group includes those who provide services to management such as analyzing the operations, managerial methods or functions of an organization in order to propose, plan and implement improvements, or analyzing advertisi needs and developing appropriate advertising plans. They are employed by management consulting firms, advertising agencies and throughout the public and private sectors or are self-employed.

Examples of titles classified in this unit group

Advertising Account Executive
Business Management Consultant
Business Methods Analyst
Consultant, Organizational Analysis
Management Analyst
Organizational Analyst
Promotion Specialist
Researcher, Organization and Methods
Senior Consultant, Operations Management

Main duties

Management consultants perform some or all of the following duties:

- Analyze and provide advice on the managerial methods and organization of a public or private sector establishment
- Conduct research to determine efficiency and effectiveness of managerial policies and programs
- Propose improvements to methods, systems and procedures in areas such as operations, human resources and communications
- Plan the re-organization of the operations of an establishment
- May supervise contracted researchers or clerical staff

Advertising and marketing consultants perform some or all of the following duties:

- Assess characteristics of products or services to be promoted and advise on the advertising needs of an establishment
- Advise clients on advertising or sales promotion strategies
- Develop and implement advertising campaigns appropriate for print or electronic media

Employment requirements

- A bachelor's degree or college diploma in business administration or commerce is usually required.
- A graduate degree in business administration may be required.
- Some establishments may require management consultants to be certified by a provincial manageme consulting association.

Additional information

- Progression to senior and managerial positions is possible with experience.

Classified elsewhere

- *Economists and Economic Policy Researchers and Ana* (4162)
- *Financial and Investment Analysts* (1112)
- *Financial Auditors and Accountants* (1111)
- *Industrial and Manufacturing Engineers* (2141)
- *Other Financial Officers* (1114)

225 Purchasing Agents and Officers

ırchasing Agents and Officers purchase general and specialized equipment, materials and business services for use or r futher processing by their establishment. They are employed throughout the public and private sectors.

amples of titles classified in this unit group

ntract Management Officer	Purchaser, Furniture and Furnishings
ntracting Officer	Purchasing Agent
aterial Management Officer	Purchasing Officer
ocurement Officer	Supply Officer, Government

ain duties

rchasing Agents and Officers perform some or all of the lowing duties:

Purchase general and specialized equipment, materials or business services for use or for further processing by heir establishment

Assess requirements of an establishment and develop specifications for equipment, materials and supplies to e purchased

nvite tenders, consult with suppliers and review quotations

Determine contract terms and conditions, award contracts or recommend contract awards

Establish delivery schedules, monitor progress and contact clients and suppliers to resolve problems

May hire, train or supervise purchasing clerks

rchasing agents and officers may specialize in the rchase of particular materials or business services such as niture or office equipment.

Employment requirements

- A bachelor's degree or college diploma in business administration, commerce or economics is usually required.
- Purchasing agents and officers purchasing specialized materials or business services may require a related university degree or college diploma. For example, a bachelor's degree or college diploma in engineering may be required for purchasers of industrial products.
- Previous experience as a purchasing clerk or as an administrative clerk may be required.

Additional information

- Progression to managerial positions is possible with experience.

Classified elsewhere

- *Purchasing and Inventory Clerks* (1474)
- *Purchasing Managers* (0113)
- *Retail and Wholesale Buyers* (6233)

1235 Assessors, Valuators and Appraisers

Assessors, Valuators and Appraisers determine the value of land, businesses, estates and other real property, for purpos of sale, purchase, taxation or disposal of assets. Appraisers also determine the value of personal and household items. Assessors, Valuators and Appraisers are employed by government agencies, real estate and other private sector companies or may be self-employed.

Examples of titles classified in this unit group

Property Assessor
Business Valuator
Property Valuator
Real Estate Appraiser

Main duties

Assessors perform some or all of the following duties:

- Assess value of land, buildings, structures, machinery, equipment and property improvements for purposes of taxation, grants and regional planning and prior to sale or purchase
- Review and analyze data such as past sales, title searches, engineering and alignment maps, soil maps, subdivision plans, water and sewer plans, location cost data and easements
- Explain assessment process to ratepayers.

Assessors may specialize in counselling and advising in a specific field of assessment such as residential, commercial, industrial, institutional or farm lands.

Valuators perform some or all of the following duties:

- Collect and analyze financial records of a business, such as financial statements, budgets, projections and sales data, to assess its competitiveness or to estimate its market value
- Prepare reports for estate planning, matrimonial litigation, insurance and business losses
- Appear as an expert witness before courts, security regulators and other regulatory boards and commissions

Appraisers perform some or all of the following duties:

- Appraise value of property, buildings, industrial and commercial machinery and equipment and personal and household items
- Prepare appraisal reports for lending agencies, insurance companies, government departments, courts, attorneys, creditors, buyers or auctioneers

Appraisers may specialize in a specific type of appraisal such as real estate appraisal.

Employment requirements

- Assessors require a college diploma in municipal assessment
  and
  Acceditation with the municipal assessment associatio of the province.
- Valuators usually require a bachelor's degree or colle diploma in accounting, business or commerce
  and
  Accreditation with the Canadian Institute of Chartere Business Valuators based on successful completion o their business and securities valuation program.
- Appraisers require a college diploma or vocational training in the field of appraisal
  or
  Several years of experience in a position related to th field of appraisal.
- Real estate appraisers usually require several years o experience as a real estate agent, right-of-way agent o property administrator.
- Appraisers of residential, commercial or industrial property require accreditation with the Appraisal Institute of Canada.

Additional information

- Progression to management positions in each field is possible with experience.

Classified elsewhere

- *Financial Auditors and Accountants* (1111)
- *Financial and Investment Analysts* (1112)
- *Insurance Adjusters and Claims Examiners* (1233)
- *Property Administrators* (1224)
- Market analysts (in 4163 *Economic Development Offic and Marketing Researchers and Consultants*)
- Right-of-way agents (in 1225 *Purchasing Agents and Officers*)

115 Other Professional Occupations in Physical Sciences

is group includes metallurgists, soil scientists and physical science occupations which are not elsewhere classified, and volve the conduct of theoretical and applied research in fields of physical science. They are employed by governments, ucational institutions and a wide range of industrial establishments.

amples of titles classified in this unit group

llistics Examiner
aterials Scientist
etallurgist
ysical Metallurgist
Research Scientist, Ceramics
Research Scientist, Composite Materials
Soil Scientist

ain duties

e following is a summary of the main duties for some cupations in this unit group:

Metallurgists conduct studies into the properties and production of metals and alloys.

Soil scientists conduct research into the composition, distribution, and evolution of soils.

Materials scientists conduct research into the properties, composition, and production of materials such as ceramics and composite materials.

Employment requirements

- A bachelor's degree in metallurgy, physics, chemistry, or a related physical science discipline is required.
- A master's or doctorate degree is usually required for employment as a research scientist.

Additional information

- Mobility between specializations in this group may be possible with experience.
- Mobility is possible to other fields of physical science or to management or regulatory program management with experience.

Classified elsewhere

- *Chemists* (2112)
- *Metallurgical and Materials Engineers* (2142)

2121 Biologists and Related Scientists

Biologists and Related Scientists conduct basic and applied research to extend knowledge of living organisms, to manag natural resources, and to develop new practices and products related to medicine and agriculture. They are employed i both laboratory and field settings by governments, environmental consulting companies, resource and utilities compani chemical, pharmaceutical and biotechnical companies and health and educational institutions.

Examples of titles classified in this unit group

Anatomist
Bacteriologist
Biologist
Botanist
Cell Biologist
Ecologist
Embryologist
Geneticist
Histologist
Immunologist
Marine Biologist
Microbiologist
Molecular Biologist
Parasitologist
Pharmacologist
Physiologist
Protozoologist
Toxicologist
Virologist
Zoologist

Main duties

Biologists perform some or all of the following duties:

- Plan and conduct studies of the environment, and the population, distribution, structure and functional characteristics and behaviour of plants and animals
- Conduct ecological and environmental impact studies and prepare reports
- Study, identify and classify plant and animal specimens
- Conduct experiments in plant or animal growth, heredity and breeding
- Prepare reports and plans for management of renewable resources
- May supervise biological technologists and technicians and other scientists

Microbiologists and cell and molecular biologists perform some or all of the following duties:

- Conduct research into the structure, function, ecology, biotechnology and genetics of micro-organisms, including bacteria, fungi, protozoans, and algae
- Conduct research into the structure and functioning of human, animal and plant tissues and cells
- Conduct studies into the identification, effects and control of human, plant and animal pathogens and toxins
- Conduct clinical or laboratory studies to test, evaluate and screen drugs and pharmaceuticals
- Conduct molecular or biochemical studies and experiments into genetic expression, gene manipulati and recombinant DNA technology
- May supervise biological technologists and technicia and other scientists

Biologists and related scientists may specialize at the macroscopic level, in fields such as botany, zoology, ecolog and marine biology; or, at the cellular and molecular leve in fields such as genetics, immunology, pharmacology, toxicology, physiology, pathology, bacteriology, and virolog

Employment requirements

- A bachelor's degree in biology or in a related discipli is required for biologists.
- A master's or doctorate degree in biology or a related discipline is required for employment as a research scientist in biology.
- Postdoctoral research experience is usually required before employment in academic departments or research institutions.

Classified elsewhere

- Biochemists (in 2112 *Chemists*)
- Specialists in laboratory medicine (in 3111 *Specialist Physicians*)

148 Other Professional Engineers, n.e.c.

his unit group includes agricultural engineers, biomedical engineers, engineering physicists and engineering scientists, ood processing engineers, marine and naval engineers, textile engineers and other specialized engineering occupations hich are not classified elsewhere.

xamples of titles classified in this unit group

gricultural Engineer
omedical Engineer
linical Engineer
ngineering Physicist
ngineering Scientist
Food Processing Engineer
Marine Engineer
Naval Architect
Naval Engineer
Textile Engineer

ain duties

he following is a summary of the main duties for some ccupations in this unit group:

Agricultural engineers study and advise on engineering problems related to agriculture and design agricultural machinery, structures, equipment, and systems.

Biomedical engineers design and develop medical diagnostic and clinical instrumentation, equipment and procedures; develop devices to assist the disabled; advise hospital administrators on planning, acquisition and use of medical equipment; and modify and install or supervise installation of equipment.

Engineering physicists and engineering scientists conduct research and develop processes, programs, and equipment to expand fundamental knowledge in the applied sciences and engineering and to support advanced engineering and scientific applications.

Food processing engineers design and develop processes, equipment and procedures for the processing, storage, packaging, and handling of food products.

Marine and naval engineers design and develop marine vessels and floating structures, and associated marine power plants, propulsion systems and related systems and equipment and oversee the building, maintenance and repair of vessels and marine systems.

Textile engineers design and develop processes, equipment, and procedures for the production of fibres, yarns, and textiles.

mployment requirements

A bachelor's degree in an appropriate engineering discipline is required.

- Registration as a Professional Engineer (P.Eng.) by a provincial or territorial association of professional engineers is often required for employment and to practice as an engineer.
- Engineers are eligible for registration following graduation from an accredited educational program and after at least two years of supervised work experince in engineering and, in some provinces, after passing a professional practice examination.
- In some provinces, those who are not graduates of an accredited educational program are eligible for registration after completing a six to eight-year term of supervised employment and successfully passing examinations.
- In Quebec, membership in the professional corporation for engineers is mandatory.
- Supervisory and senior positions in this unit group require experience.

Additional information

- There is limited mobility between the engineering specializations included in this unit group.
- Engineers often work in a multidisciplinary environment and acquire knowledge and skills through work experience that may allow them to practice in associated areas of science, engineering, sales, marketing or management.

Classified elsewhere

- Biochemical engineers (in 2134 *Chemical Engineers*)
- Marine engineer officers – water transport (in 2274 *Engineer Officers, Water Transport*)
- Physicists (in 2111 *Physicists and Astronomers*)

2153 Urban and Land Use Planners

Urban and Land Use Planners develop plans and recommend policies for managing the utilization of land, physical facilities and associated services for urban and rural areas and remote regions. They are employed by all levels of government, land developers, engineering and other consulting companies or may work as private consultants.

Examples of titles classified in this unit group

City Planner
Community and Urban Planner
Environment Planner
Land Use Planner
Long Range Planner
Municipal Planner
Planner
Planning Analyst
Park Planner
Recreation Planner
Regional Planner
Urban Planner

Main duties

Urban and Land Use Planners perform some or all of the following duties:

- Compile and analyze data on demographic, economic, legal, political, cultural, sociological, physical and other factors affecting land use
- Confer with municipal, provincial and federal authorities, civic leaders, social scientists, lawyers, land developers, the public and special interest groups to formulate and develop land use or community plans
- Prepare and recommend land development concepts and plans for zoning, subdivisions, transportation, public utilities, community facilities, parks, agricultural and other land uses
- Prepare plans for environmental protection, such as wildlife preserves, national and provincial parks, and protection of watersheds
- Present plans to civic, rural and regional authorities and hold public meetings to present plans, proposals or planning studies to the general public and special interest groups
- Review and evaluate proposals for land use and development plans and prepare recommendations
- Process application for land development permits and administer land use plans and zoning by-laws
- Formulate long range objectives and policies relative to future land use and the protection of the environment
- Supervise and co-ordinate work of urban planning technicians and technologists

Employment requirements

- A bachelor's degree in urban and regional planning geography, architecture, engineering or a related discipline is requried.
- A master's degree in one of these disciplines may be required.
- Membership in the Canadian Institute of Planners is usually required.
- Membership in a provincial planning institute may be required in some provinces.
- In Quebec, membership in the professional corporati for urban planners is mandatory.

Additional information

- Progression to management positions in planning is possible with experience.

Classified elsewhere

- *Architects* (2151)
- *Land Surveyors* (2154)
- Mangers in land use planning (in 0411 *Government Managers in Health and Social Policy Development an Program Administration*)

221 Biological Technologists and Technicians

iological Technologists and Technicians may work independently or provide technical support and services to scientists, ngineers and other professionals working in fields of agriculture, resource management, plant and animal biology, icrobiology, cell and molecular biology and health sciences. They are employed in both laboratory and field settings by overnments, manufacturers of food products, chemicals and pharmaceuticals, biotechnology companies, health, research d educational institutions, environmental consulting companies and resource and utilities companies.

xamples of titles classified in this unit group

gricultural Technician
gricultural Technologist
grology Technician
quaculture Technician
acteriology Technician
iological Laboratory Technologist
otanical Technician
ish Hatchery Technician
Fisheries Technician
Food Bacteriological Technician
Microbiology Quality Control Technologist
Microbiology Technologist
Plant Breeding Technician
Seed Technologist
Wildlife Biology Technician

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lain duties

iological technologists perform some or all of the llowing duties:

- Conduct biological, microbiological and biochemical tests and laboratory analyses in support of quality control in food production, sanitation, pharmaceutical production and other fields
- Perform experimental procedures in agriculture, plant breeding, animal husbandry, biology and biomedical research
- Conduct field research and surveys to collect data and samples of water, soil, plant and animal populations
- Analyze data and prepare reports
- Conduct or supervise operational programs such as fish hatchery, greenhouse and livestock production programs

ological technicians perform some or all of the following ities:

- Assist in conducting biological, microbiological and biochemical tests and laboratory analyses
- Perform limited range of technical functions in support of agriculture, plant breeding, animal husbandry, biology and biomedical research
- Assist in conducting field research and surveys to collect data and samples of water, soil, plant and animal populations
- Assist in analysis of data and preparation of reports

nployment requirements

- Completion of a two to three-year college program in a field related to agriculture, biology, microbiology, wildlife or resource management is usually required for employment as a biological technologist.
- Completion of a one to two-year college program in a related field is required for employment as a biological technician.
- Certification with provincial associations is available, but voluntary.
- In Quebec, membership in the professional corporation for technologists in applied sciences is mandatory.

Additional information

- There is limited mobility between occupations in this group.
- The use of the term technologist and technician has not become standardized in this field. Some technicians working in support of government and academic research in biology are university graduates.

Classified elsewhere

- *Agricultural and Fish Products Inspectors* (2222)
- *Conservation and Fishery Officers* (2224)
- *Forestry Technologists and Technicians* (2223)
- *Medical Laboratory Technicians* (3212)
- *Medical Laboratory Technologists and Pathologists' Assistants* (3211)
- Biochemistry technologists and technicians, except medical (in 2211 *Applied Chemical Technologists and Technicians*)
- Biomedical engineering technologists (in 2241 *Electrical and Electronics Engineering Technologists and Technicians*)

2222 Agricultural and Fish Products Inspectors

Agricultural and Fish Products Inspectors inspect agricultural and fish products for conformity to prescribed production storage and transportation standards. They are employed by government departments and agencies and by private secto food processing companies. Superivsors of Agricultural and Fish Products Inspectors are also included in this group.

Examples of titles classified in this unit group

Agricultural Products Inspector
Crop Certification Inspector
Dairy Products Inspector
Fish and Fish Products Inspector
Fruit and Vegetables Inspector
Grain Inspector
Livestock Inspector
Plant Protection Inspector
Poultry Inspector
Supervisor, Agricultural Products Inspection
Supervisor, Fish Products Inspection

Main duties

The following is a summary of main duties for some occupations in this unit group:

- Fish and fish products inspectors inspect fish, fish products, fish handling and processing methods, prepare reports and ensure that regulations are upheld.
- Fruit and vegetables inspectors inspect fresh and frozen fruit and vegetables at an inspection centre and prepare reports on crop production and market conditions.
- Grain inspectors inspect and grade all classes of grain at terminal elevators, monitor the fumigation of infested grain and of storage, handling and transportation equipment to ensure that sanitary procedures are followed.
- Meat inspectors monitor the operations and sanitary conditions of slaughtering or meat processing plants and inspect carcasses to ensure they are fit for human consumption.
- Plant protection inspectors certify seed crops, oversee the quarantine, treatment or destruction of plants and plant products, and the fumigation of plants and plant product imports and exports.

Employment requirements

- Completion of secondary school is required.
- A bachelor's degree or college diploma in agriculture, biology or food processing technology
  or
- Several years of experience in agricultural production fish processing are required.
- Completion of in-house training courses is required.

Additional information

- Progression to managerial positions in this field is possible with experience.

Classified elsewhere

- *Biological Technologists and Technicians* (2221)
- *Forestry Technologists and Technicians* (2223)
- *Inspectors in Public and Environmental Health and Occupational Health and Safety* (2263)
- Fish graders and meat graders who perform routine quality control duties or tally landed fish (in 9465 *Test and Graders, Food and Beverage Processing*)

224 Conservation and Fishery Officers

onservation and Fishery Officers enforce the federal and provincial regulations established for the protection of fish, ildlife and other natural resources and collect and relay information on resource management. They are employed by deral and provincial government departments.

xamples of titles classified in this unit group

onservation Officer
sh and Wildlife Officer
shery Officer
rest Ranger, Wildlife Management
Game Officer
Game Warden
Natural Resource Officer
Park Ranger

ain duties

nservation and Fishery Officers perform some or all of e following duties:

- Generate public awareness of fish and wildlife conservation and regulations
- Conduct patrols by truck, aircraft, boat, or on foot, to ensure compliance with the provincial and federal statutes relating to fish, wildlife and the environment
- Investigate complaints, arrest violators, prepare briefs and present evidence in court
- Issue licences, export documents and special permits and collect royalties assessed on fish, wildlife and timber resources
- Implement and supervise approved techniques in preventing or overcoming damage caused by wildlife
- Perform resource protection duties
- Gather resource data by making inventories of fish, collecting water samples and assisting biologists in scientific research
- Supervise or provide firearms safety training courses and trapper education courses

Employment requirements

- Completion of a one to three-year college program in renewable resources management is required.
- On-the-job training and courses related to law enforcement and resource management are provided.
- A class 5 driver's licence, pesticide applicators licence and explosives licence may be required.
- In Quebec, membership in the professional corporation for technologists in applied sciences is mandatory for some occupations in this group.

Additional information

- Progression to senior and supervisory positions is possible with experience.

Classified elsewhere

- *Biological Technologists and Technicians* (2221)
- *Forestry Technologists and Technicians* (2223)
- Fish inspectors (in 2222 *Agricultural and Fish Products Inspectors*)

2225 Landscape and Horticulture Technicians and Specialists

This unit group includes those who survey and assess landscapes; draw sketches and build models of landscape designs construct and maintain gardens, parks, golf courses and other landscaped environments; advise clients on issues related to horticulture; breed, cultivate and study plants; analyze forest growth; and treat injured and diseased trees and plants. They are employed by landscape designers and contractors, lawn service and tree care establishments, golf courses, nurseries and green houses, municipal, provincial and national parks, or they may be self-employed.

Examples of titles classified in this unit group

Arborist
Golf Course Superintendent
Horticulture Specialist
Horticultural Technician
Horticulturist
Hydroponics Technician
Landscape Architectural Technician
Landscape Gardener
Landscape Specialist
Landscape Technician
Landscaper
Lawn Care Specialist
Silviculturist
Tree Service Technician

Main duties

The following is a summary of the main duties for some occupations in this unit group:

- Arborists and tree service technicians examine trees and shrubs to diagnose problems and disease, and apply various treatments such as pruning, spraying, repairing damaged areas and injecting with treatment solution.
- Golf course superintendents direct crews who maintain the health and appearance of golf courses and their surrounding landscapes, plant and move trees, and apply fertilizers, fungicides, herbicides and pesticides.
- Horticulturists plan and co-ordinate the growth and use of plants for landscaping, ornamental uses and other purposes.
- Landscape designers and landscape architectural technicians and technologists survey and assess sites, prepare drawings, sketches and reports and perform other duties to assist landscape architects in designing landscaped environments.
- Landscape gardeners plant and maintain private and public lawns and gardens.
- Landscapers plan and construct landscaped environments which may include trees, shrubberies, lawns, fences, decks, patios and other landscape structures.
- Lawn care specialists visit clients, assess the health of lawns, and apply fertilizer, pesticides and other lawn care products.

Employment requirements

- Completion of a university or college program in agronomy, arboriculture, forestry, horticulture, landscaping, landscape design, landscape technology silviculture is usually required.
- Experience as a landscape and grounds maintenance labourer may be required for golf course superintendents, landscape gardeners and landscapers
- A provincial licence to apply chemical fertilizers, fungicides, herbicides and pesticides may be required.
- Apprenticeship programs in horticulture are available Ontario and British Columbia.
- Apprenticeship programs in landscape gardening are available in Ontario and Alberta.

Classified elsewhere

- *Biological Technologists and Technicians* (2221)
- *Forestry Technologists and Technicians* (2223)
- *Landscape Architects* (2152)
- *Landscaping and Grounds Maintenance Contractors an Managers* (8255)
- *Nursery and Greenhouse Operators and Managers* (825
- *Nursery and Greenhouse Workers* (8432)
- *Supervisors, Landscape and Horticulture* (8256)
- Botanists (in 2121 *Biologists and Related Scientists*)

112 Lawyers and Quebec Notaries

awyers and Quebec Notaries advise clients on legal matters, plead cases or conduct prosecutions in courts of law, epresent clients before tribunals and administration boards and draw up legal documents such as contracts and wills. awyers and Quebec Notaries are employed in law firms, notary offices, prosecutor's offices, federal, provincial and unicipal governments and various business establishments or they may be self-employed. Articling students are cluded in this group.

xamples of titles classified in this unit group

rticling Student
ttorney
arrister
orporate Counsel
orporation Notary (Quebec)
Crown Attorney
Crown Prosecutor
General Counsel
Law Partner
Lawyer
Legal Advisor
Notary (Quebec)
Notary in Partnership (Quebec)
Solicitor

lain duties

awyers and Quebec Notaries perform some or all of the llowing duties:

- Advise clients of their legal rights and all matters related to law
- Plead clients' cases before courts of law, tribunals and boards (lawyers only)
- Draw up legal documents such as real estate transactions, wills, divorces and contracts
- Negotiate settlements of civil disputes (lawyers only)
- Perform administrative and management functions related to the practice of law
- May act as executor, trustee or guardian in estate and family law matters

awyers and Quebec Notaries may specialize in specific reas of law such as criminal law (lawyers only), corporate w, commercial law, real estate law, family and estate law, tellectual property law and labour law.

mployment requirements

awyers

- Two to three years of undergraduate studies or, in Quebec, completion of college program
  and
  A bachelor's degree from a recognized law school
  and
  A period of articling
  and
  A bar admission course and successful completion of the bar examination set by the provincial law society are required.
- Licensure by the provincial or territorial law society is required.
- In Quebec, membership in the professional corporation for lawyers is mandatory.
- Lawyers may specialize in a particular area of law through experience.

Notaries (Quebec)

- Two to three years of undergraduate studies or, in Quebec, completion of college program
  and
  A bachelor's degree from a recognized law school
  and
  A one-year course in notarial practice from a recognized faculty of law or a Diploma of Notarial Law (D.D.N.)
  and
  Successful completion of the final examination set by the Chamber of Notaries are required.
- Registration with the Chamber of Notaries is required.
- In Quebec, membership in the professional corporation for notaries is mandatory.
- Quebec notaries may specialize in a particular area of law through experience.

Additional information

- Lawyers wishing to practise in another province may be required to pass examinations set by the provincial law society.

Classified elsewhere

- Legal department directors (in 0114 *Other Administrative Services Managers*)
- Legal firm managers (in 0123 *Other Business Services Managers*)
- Notaries public and trademark agents who are not lawyers (in 4211 *Paralegal and Related Occupations*)
- Patent agents who are not lawyers (in 4161 *Natural and Applied Science Policy Researchers, Consultants and Program Officers*)

4161 Natural and Applied Science Policy Researchers, Consultants and Program Officers

Natural and Applied Science Policy Researchers, Consultants and Program Officers conduct research, prepare reports, provide consultation and advice and administer programs in a variety of areas related to the natural and applied sciences They are employed by federal, provincial and municipal governments, private companies, advisory and consultant agencies or they may be self-employed.

Examples of titles classified in this unit group

Energy Policy Analyst
Environmental Impact Analyst
Environmental Issues Lobbyist
Ergonomist
Fisheries Analyst
Industrial Hygienist
Natural Resource Policy Analyst
Occupational Hygienist
Patent Agent
Program Officer, Natural and Applied Science
Scientific Consultant
Supervisor, Environmental Program Development
Transportation Safety Analyst
Transport Program Analyst

Main duties

The following is a summary of main duties for some occupations in this group:

- Ergonomists conduct research and advise on interrelationships between persons, equipment and working or living environments to ensure products and work methods maximize safety, productivity and comfort.
- Occupational hygienists study and evaluate physical and chemical hazards and stresses in the workplace. They suggest changes to work processes and provide information to workers on methods to reduce the risk of specific occupational hazards.
- Patent agents advise clients on elements of patent law and on the patentability of inventions, conduct patent searches, prepare patent applications and represent clients before the patent office.
- Science policy and program officers conduct research and advise on policies or develop or administer programs related to transportation, communications, natural resources, agriculture, the environment, energy, land use and other scientific fields.

Employment requirements

- A bachelor's degree or college diploma in a related scientific or technical discipline is usually required for occupations in this unit group.
- A master's degree in a related scientific discipline may be required.
- Occupational hygienists may require certification by The Canadian Registration Board of Occupational Hygienists or le Conseil d'accréditation en hygiène industrielle du Québec.
- Patent agents require 12 months of work experience i the patent field and successful completion of examinations set by the Commissioner of Patents.

Additional information

- Progression to supervisory or managerial positions in these fields is possible with experience.

Classified elsewhere

- *Architecture and Science Managers* (0212)
- *Health Policy Researchers, Consultants and Program Officers* (4165)
- *Professional Occupations in Life Sciences* (212)
- *Professional Occupations in Physical Sciences* (211)
- Professional occupations in engineering (in 213 *Professional Occupations in Civil, Mechanical, Electric and Chemical Engineering* and 214 *Other Professional Occupations in Engineering*)

162 Economists and Economic Policy Researchers and Analysts

conomists and Economic Policy, Researchers and Analysts conduct research and develop models to illustrate and recast economic behaviour and patterns. They are employed by government agencies and private establishments to vise on matters such as finance, taxation, international trade and labour, agricultural and industrial markets.

xamples of titles classified in this unit group

gricultural Economist
evelopment Economist
conomic Analyst
conomist
conomist, Natural Resources
nancial Economist
dustrial Economist
Industrial Trade Economist
Investment Economist
Labour Economist
Retail Analyst
Tax Economist
Trade Economist

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ain duties

conomists and Economic Policy Researchers and nalysts perform some or all of the following duties:

- Conduct research and develop models to illustrate and forecast economic behaviour and patterns, and devise methods for collection and analysis of data
- Forecast production and consumption of agricultural products, based on records of past crops, labour supply and general economic and agricultural conditions
- Analyse factors which determine economic growth and advise government agencies on policies to increase economic activities
- Study mathematical formulae and statistical techniques and apply them to the testing and quantifying of economic theories and the solution of economic problems
- Study the nature of money, credit and credit instruments and the operation of banks and other financial institutions to develop monetary policies and forecasts of financial activity
- Examine problems related to the economic activity of individual companies
- Examine financing methods, production costs and techniques and marketing policies to discover possible improvements
- Examine statistical data on the exchange of goods and services among nations
- Forecast production and consumption of renewable resources and supply, consumption and depletion of non-renewable resources
- Conduct research on market conditions in local, regional or national area to set sales and pricing levels for goods and services and to assess market potential and future trends

Employment requirements

- A bachelor's degree in economics is required.
- A master's or doctorate degree in economics may be required.

Additional information

- Progression to managerial positions in economics is possible with experience.

Classified elsewhere

- *Economic Development Officers and Marketing Researchers and Consultants* (4163)
- *Financial and Investment Analysts* (1112)
- *Government Managers in Economic Analysis, Policy Development and Program Administration* (0412)
- Economists who teach at universities (in 4121 *University Professors*)
- Labour policy analysts (in 4164 *Social Policy Researchers, Consultants and Program Officers*)

5121 Writers

Writers plan, research and write books, scripts, plays, essays, speeches, manuals, specifications and other non-journalis articles for publication or presentation. They are employed by advertising agencies, governments, large corporations, private consulting firms, publishing firms and other establishments, or they may be self-employed.

Examples of titles classified in this unit group

Advertising Copywriter
Copywriter
Essayist
Humorist
Novelist
Playwright
Poet
Scientific Writer
Script Writer
Short-story Writer
Specifications Writer
Speech Writer
Technical Writer
Television Writer
Writer

Main duties

The following is a summary of main duties for some occupations in this unit group:

- Novelists, playwrights, script writers, poets and other creative writers conceive and write novels, plays, scripts, poetry and other material for publication or presentation and may conduct research to establish factual content and to obtain other necessary information.
- Technical writers analyze material, such as specifications, notes and drawings, and write manuals, user guides and other documents to explain clearly and concisely the installation, operation and maintenance of electronic, mechanical and other equipment.
- Copywriters study and determine selling features of products and services and write text for advertisements and commercials.

Writers may specialize in a particular subject or type of writing.

Employment requirements

- Technical writers usually require a university degree i the area of specialization, such as computer science o engineering.
- Copywriters usually require a university degree or college diploma in English, French, marketing or othe discipline.
- Creative writing programs are offered by universities and colleges.
- Talent and ability, as demonstrated by a portfolio of work, are important hiring criteria.

Classified elsewhere

- *Editors* (5122)
- *Journalists* (5123)
- *Professional Occupations in Public Relations and Communications* (5124)
- *Translators, Terminologists and Interpreters* (5125)
- Song writers (in 5132 *Conductors, Composers and Arrangers*)

411 Sales Representatives, Wholesale Trade (Non-Technical)

les Representatives, Wholesale Trade (Non-Technical) sell non-technical goods and services to retail, wholesale, mmercial, industrial and professional clients. They are employed by establishments that produce or provide goods and rvices such as petroleum companies, food, beverage and tobacco producers, clothing manufacturers, motor vehicles and rts manufacturers, hotels, business services firms and transportation companies. Sales representatives, wholesale trade ho are supervisors are also included in this unit group.

amples of titles classified in this unit group

count Executive—Wholesale Trade
od Products Sales Representative
eight Sales Agent
aphic Design Sales Representative
tel Accommodations Sales Executive
quor Sales Representative—Wholesale
Magazine Sales Representative—Wholesale
Oil Distributor
Periodicals Sales Representative
Security Services Sales Consultant
Supervisor, Wholesale Trade Representatives
Transfer Company Agent

ain duties

les Representatives, Wholesale Trade (Non-Technical) rform some or all of the following duties:

Promote sales to existing clients

Identify and solicit potential clients

Provide clients with a presentation on the benefits and uses of goods or services

Estimate or quote prices, credit terms, warranties and delivery dates

Prepare or oversee preparation of sales contracts

Consult with clients after sale to resolve problems and to provide ongoing support

Review and adapt to information regarding product innovations, competitors and market conditions

May supervise the activities of other sales representatives

Employment requirements

- Completion of secondary school is required.
- A university degree or completion of a college or other program may be required.
- Experience in sales or in an occupation related to the product or service is usually required.
- Supervisors and senior sales representatives require experience.

Additional information

- Progression to sales management positions is possible with additional training or experience.

Classified elsewhere

- *Retail Salespersons and Sales Clerks* (6421)
- *Sales, Marketing and Advertising Managers* (0611)
- *Technical Sales Specialists, Wholesale Trade* (6221)

7411 Truck Drivers

Truck Drivers operate heavy trucks to transport goods and materials over urban, interurban, provincial and internation routes. They are employed by transportation companies, manufacturing and distribution companies, moving companies they may be self-employed.

Examples of titles classified in this unit group

Bulk Goods Truck Driver
Dump Truck Driver
Flatbed Truck Driver
Logging Truck Driver
Long Haul Truck Driver
Moving Van Driver
Tow Truck Driver
Truck Driver
Truck Driver, Heavy Truck
Truck Driver, Tractor-trailer

Main duties

Truck Drivers perform some or all of the following duties:

- Operate and drive straight or articulated trucks weighing over 4,600 kg with three or more axles to transport goods and material to destinations
- Oversee all functions of vehicles, such as condition of equipment, loading and unloading, and safety and security of cargo
- Obtain special permits and other documents required to transport cargo on international routes
- Record cargo information, distance travelled, fuel consumption and other information in log book or on on-board computer
- Receive and relay information to central dispatcher
- May drive as part of a team or convoy
- May transport hazardous products or dangerous goods
- May drive lighter, special purpose trucks

Employment requirements

- Some secondary school education is usually required.
- On-the-job training is provided.
- A driver's licence appropriate to the class of vehicle being driven is required.
- Air brake endorsement is required for drivers who operate vehicles equipped with air brakes.
- Drivers who transport hazardous products or danger goods must be certified by employers.

Additional information

- Progression to supervisory positions or to non-drivin occupations, such as truck driving instructors, safety officers or truck dispatchers is possible with addition training or experience.

Classified elsewhere

- *Supervisors, Motor Transport and Other Ground Tran Operators* (7222)
- Drivers of light trucks (in 7414 *Delivery Drivers*)
- Truck dispatchers (in 1475 *Dispatchers and Radio Operators*)
- Truck driving instructors (in 4131 *College and Other Vocational Instructors*)
- Snowplow, road oiler and garbage truck (in 7422 *Pub Works Maintenance Equipment Operators*)

251 Farmers and Farm Managers

rmers and Farm Managers manage the operations and functions of a farm. They are responsible for growing crops, ising and breeding livestock, poultry and other animals and marketing farm products.

amples of titles classified in this unit group

iarist
pple Grower
eeder, Domestic Animals
icken Farmer
iry Farmer
uit Farmer
edlot Manager
r Farmer
ape Grower
g Breeder
Horse Breeder
Market Gardener
Potato Farmer
Rancher
Seed Grower
Sod Farmer
Vegetable Grower
Vineyard Manager
Wheat Farmer

ain duties

rmers and Farm Managers perform some or all of the lowing duties:

Manage the overall operation of a farm, ranch or rchard

etermine amount and kinds of crops to be grown and ivestock to be raised

lant, cultivate and harvest crops

aise and breed livestock and poultry

ire and supervise farm workers

stablish a marketing program

urchase farm machinery, livestock, seed, feed and ther supplies

Maintain farm machinery, equipment and buildings

evelop and keep financial and production records

rmers and farm managers may manage farms cializing in particular crops such as wheat, apples or atoes or raise particular livestock such as beef cattle, hogs chickens.

Employment requirements

- Extensive farming experience (obtained as a farmer, farm supervisor or specialized livestock worker or by working on a family farm) is usually required.
- A college diploma in agriculture may be required.

Classified elsewhere

- *Agricultural and Related Service Contractors and Managers* (8252)
- *Farm Supervisors and Specialized Livestock Workers* (8253)
- *Nursery and Greenhouse Operators and Managers* (8254)
- *Supervisors, Landscape and Horticulture* (8256)

8253 Farm Supervisors and Specialized Livestock Workers

Farm supervisors supervise the work of general farm workers and harvesting labourers and perform general farm duti Specialized livestock workers carry out feeding, health and breeding programs on dairy, beef, sheep, poultry and hog farms and may also supervise general farm workers and harvesting labourers.

Examples of titles classified in this unit group

Cattle Herdsperson
Dairy Herdsperson
Farm Foreman/woman
Farm Supervisor
Feedlot Foreman/woman
Hog Operation Supervisor
Horse Trainer
Poultry Farm Foreman/woman
Ranch Foreman/woman
Swine Herdsperson
Vegetable Farm Foreman/woman

Main duties

Farm Supervisors perform some or all of the following duties:

- Co-ordinate and supervise the work of general farm workers and harvesting labourers
- Supervise breeding programs and harvest operations
- Develop work schedules and establish procedures
- Maintain quality control and production records
- Perform general farm duties

Farm supervisors may specialize in dairy, poultry, swine, beef, sheep, fruit, vegetable, mixed, speciality and equine farms.

Specialized livestock workers perform some or all of the following duties:

- Formulate a feeding program
- Maintain livestock performance records
- Carry out a pasture or pen breeding program
- Recognize and treat certain livestock health problems
- Train horses
- Perform general farm duties
- May supervise general farm workers and harvesting labourers

Specialized livestock workers usually specialize in one typ farm animal, such as beef cattle, dairy cattle or swine.

Employment requirements

- Farm supervisors and specialized livestock workers require a college certificate or other specialized train in agriculture or livestock husbandry.

Classified elsewhere

- *Agricultural and Related Service Contractors and Managers* (8252)
- *Farmers and Farm Managers* (8251)
- *General Farm Workers* (8431)
- *Harvesting Labourers* (8611)

254 Nursery and Greenhouse Operators and Managers

ursery and Greenhouse Operators and Managers plan, organize, direct and control the activities of nursery and reenhouse staff who grow and market trees, shrubs, flowers and plants.

xamples of titles classified in this unit group

hristmas Tree Farm Operator
lower Grower
reenhouse Farmer
reenhouse Manager
reenhouse Operator
Nursery Farmer
Nursery Manager
Nursery Operator
Plant Grower

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lain duties

ursery and Greenhouse Operators and Managers rform some or all of the following duties:

- Plan, organize, direct and control the operations of nurseries and greenhouses
- Establish the environmental conditions required to grow trees, shrubs, flowers and plants
- Determine type and quantity of stock to grow
- Supervise staff in planting, transplanting, feeding and spraying stock
- Develop marketing plans
- Provide information to customers on gardening and on the care of trees, shrubs, flowers, plants and lawns
- Order materials such as fertilizer, garden and lawn care equipment, and other nursery and greenhouse related accessories
- Hire and supervise staff, oversee training and set work schedules
- Maintain records on stock, finances and personnel

Employment requirements

- Completion of a college program in horticulture is usually required.
- Experience as a nursery or greenhouse supervisor is required.

Classified elsewhere

- *Nursery and Greenhouse Workers* (8432)
- *Supervisors, Landscape and Horticulture* (8256)
- Turf Growers (in 8251 *Farmers and Farm Managers*)

8255 Landscaping and Grounds Maintenance Contractors and Managers

Landscaping and Grounds Maintenance Contractors and Managers plan, organize, direct and control the operations of landscaping, interior plantscaping, lawn care and tree service departments and establishments.

Examples of titles classified in this unit group

Grounds Maintenance Contractor
Grounds Maintenance Manager
Interior Plantscaping Contractor
Landscape Service Contractor
Landscaping Contractor
Landscaping Manager
Lawn Care Manager
Lawn Maintenance Contractor
Tree Service Contractor

Main duties

Landscaping and Grounds Maintenance Contractors and Managers perform some or all of the following duties:

- Plan, organize, direct and control the operations of landscaping, interior plantscaping, lawn care and tree service establishments
- Tender bids on contracts for landscaping and grounds maintenance work
- Plan and estimate the materials and labour requirements for individual contracts
- Organize and direct the planting and maintenance of trees, gardens, lawns, shrubs and hedges and the construction and installation of fences, decks, patios, walkways and retaining walls
- Hire and supervise staff
- Maintain financial and personnel records

Employment requirements

- A college diploma or specialized courses in landscapin and horticulture are usually required.
- Experience as a landscape or horticulture supervisor as a landscape or horticulture technician is required.

Classified elsewhere

- *Contractors and Supervisors, Other Construction Trade Installers, Repairers and Servicers* (7219)
- *Landscape Architects* (2152)
- *Landscape and Horticulture Technicians and Specialis* (2225)
- *Nursery and Greenhouse Operators and Managers* (825
- *Supervisors, Landscape and Horticulture* (8256)

256 Supervisors, Landscape and Horticulture

upervisors in this unit group supervise and co-ordinate the activities of workers in the following unit groups: *andscaping and Grounds Maintenance Labourers* (8612) and *Nursery and Greenhouse Workers* (8432). They are employed y landscaping companies, cemeteries, lawn care and tree service companies, nurseries and greenhouses, and by ndscaping departments of governments and private establishments.

xamples of titles classified in this unit group

emetery Foreman/woman
reenhouse Supervisor
rounds Keeper Supervisor
andscaping Foreman/woman
orticulture Worker Supervisor
Nursery Foreman/woman
Park Caretaker
Park Supervisor, Grounds Maintenance
Supervisor, Nursery Workers
Supervisor, Park Labourers

ain duties

upervisors in this unit group perform some or all of the llowing duties:

Supervise and co-ordinate the activities of workers who perform the following duties: maintain lawns, gardens, athletic fields, golf courses, cemeteries, parks, interior plantscapes and other landscaped areas; spread topsoil and lay sod; spray, prune cut and remove trees and shrubs; construct landscape and landscape structures; and plant, cultivate and harvest trees, shrubs, flowers and plants

Establish work schedules and procedures and co-ordinate activities with other work units

Resolve work-related problems and prepare and submit progress and other reports

Train workers in job duties and company policies

Requisition supplies and materials

May perform the same duties as workers supervised

Employment requirements

- Completion of secondary school is usually required.
- Experience in the occupation supervised is required.
- A provincial licence to apply chemical fertilizers, fungicides, herbicides and pesticides may be required.

Classified elsewhere

- *Landscape Architects* (2152)
- *Landscaping and Grounds Maintenance Contractors and Managers* (8255)
- *Nursery and Greenhouse Operators and Managers* (8254)

8257 Aquaculture Operators and Managers

Aquaculture Operators and Managers manage operations of facilities which cultivate and harvest fish, shellfish or marin plants for replenishment of wildlife stocks or for commercial sale. They are employed by public or private fish hatcheries and commercial aquatic farms or they may be self-employed.

Examples of titles classified in this unit group

Aquaculture Manager
Aquaculture Operator
Fish Farm Manager
Fish Farm Operator
Fish Farmer
Fish Hatchery Manager
Fish Hatchery Operator
Mussel Grower
Oyster Grower
Salmon Grower
Trout Farmer

Main duties

Aquaculture Operators and Managers perform some or all of the following duties:

- Manage the overall operation of a fish hatchery, fish farm or other aquatic farm
- Identify requirements of the species and select and oversee preparation of site for species cultivation
- Co-ordinate selection and maintenance of brood stock
- Determine food requirements and structure feeding regimes
- Monitor environment and maintain optimum conditions
- Conduct and supervise stock examination to identify disease or parasites, and apply prescribed medicinal substances to control and prevent infection
- Operate and maintain cultivating and harvesting equipment
- Collect and record growth and production data
- Supervise and train aquaculture and fish hatchery support workers and supervise technicians and technologists
- Maintain financial records and establish market strategies, inventory and quality control methods
- Scuba dive to inspect sea farm operations
- Design and construct pens, floating stations and collector strings or fences for sea farms
- Supervise in processing the product

Employment requirements

- Completion of secondary school is usually required.
- A college diploma in aquaculture or a related field
  or
  Several years of experience in fishing or aquaculture operations are usually required.
- A commercial aquaculture or fish hatchery licence, permit or lease is required for self-employed aquaculture operators and managers.

Classified elsewhere

- Aquaculture technicians (in 2221 *Biological Technolog and Technicians*)
- Aquaculture support workers (in 8613 *Aquaculture an Marine Harvest Labourers*)

8431 General Farm Workers

General Farm Workers plant, cultivate and harvest crops, raise livestock and poultry and maintain and repair farm equipment and buildings. This group includes operators of farm machinery. General Farm Workers are employed on crop, livestock, fruit, vegetable and specialty farms.

Examples of titles classified in this unit group

Beef Cattle Farm Worker
Cattle Ranch Labourer
Cowboy
Dairy Farm Worker
Farm Machinery Operator
Fruit Tree Pruner
General Farm Worker
Grain Farm Worker
Harvester Machine Operator
Hatchery Worker
Poultry Farm Worker
Vegetable Farm Worker

Main duties

General Farm Workers perform some or all of the following duties:

- Plant, fertilize, cultivate, spray, irrigate and harvest crops
- Feed and tend livestock and poultry
- Operate and maintain farm machinery and equipment
- Detect disease and health problems in crops, livestock and poultry
- Prepare produce for market
- Clean stables, barns, barnyards and pens

General farm workers can become specialized in a particular type of crop or livestock production through experience.

Employment requirements

- There are no specific education or training requirements. However, college certificate or other specialized courses related to farming, such as farm equipment mechanics, agricultural welding, tree pruning and pesticide application, are available.
- Basic farm knowledge, usually obtained from working on a family farm, may be required for employment.

Additional information

- Progression to supervisory positions is possible with experience.

Classified elsewhere

- *Agricultural and Related Service Contractors and Managers* (8252)
- *Harvesting Labourers* (8611)
- *Farmers and Farm Managers* (8251)
- *Farm Supervisors and Specialized Livestock Workers* (8253)

8432 Nursery and Greenhouse Workers

Nursery and Greenhouse Workers plant, cultivate and harvest trees, shrubs, flowers and plants, and serve nursery and greenhouse customers. They are employed in indoor and outdoor nurseries and greenhouses.

Examples of titles classified in this unit group

Forest Nursery Worker
Greenhouse Worker
Hothouse Worker
Hydroponics Worker
Nursery Worker

Main duties

Nursery and Greenhouse Workers perform some or all of the following duties:

- Prepare soil; plant bulbs, seeds and cuttings; graft and bud plants; and transplant seedlings and rooted cuttings
- Spray trees, shrubs, flowers and plants to prevent disease and pests
- Position and regulate greenhouse and outdoor irrigation systems to water plants and fields
- Dig, cut and transplant trees, shrubs, flowers and plants and prepare them for sale
- Provide information to customers on gardening and the care of trees, shrubs, flowers, plants and lawns
- May operate tractors and other machinery and equipment to fertilize, cultivate, harvest and spray fields and plants

Employment requirements

- Completion of secondary school may be required.
- Completion of college courses in horticulture or a related field may be required.
- On-the-job training is provided.
- A provincial licence to apply chemical fertilizers, fungicides, herbicides and pesticides may be required.

Additional information

- Progression to supervisory positions such as greenhouse supervisor is possible with experience.

Classified elsewhere

- *General Farm Workers* (8431)
- *Harvesting Labourers* (8611)
- *Landscaping and Grounds Maintenance Labourers* (8612)
- *Nursery and Greenhouse Operators and Managers* (8254)
- *Silviculture and Forestry Workers* (8422)
- *Supervisors, Landscape and Horticulture* (8256)

8611 Harvesting Labourers

Harvesting Labourers assist other farm workers to harvest, sort and pack crops.

Examples of titles classified in this unit group

Apple Picker
Berry Picker
Crop Farm Labourer
Fruit Picker
Harvest Hand
Tobacco Picker
Vegetable Packer

Main duties

Harvesting Labourers perform some or all of the following duties:

- Pick row and orchard crops
- Sort and pack fruit and vegetables at farm
- Load, unload and transfer crates, supplies and farm produce, livestock and poultry

Employment requirements

- There are no specific education or training requirements.

Additional information

- Progression to other farm worker positions is possible with experience.

Classified elsewhere

- *Farm Supervisors and Specialized Livestock Workers* (8253)
- *Farmers and Farm Managers* (8251)
- *General Farm Workers* (8431)

8612 Landscaping and Grounds Maintenance Labourers

Landscaping and Grounds Maintenance Labourers perform manual work to assist in the construction of a landscape and related structures and to maintain lawns, gardens, athletic fields, golf courses, cemeteries, parks, landscaped interiors an other landscaped areas. They are employed by landscaping and lawn care companies, golf course, cemeteries, and by landscaping departments of governments and private establishments.

Examples of titles classified in this unit group

Bulb Planter
Cemetery Labourer
Gardening Helper
Grass Cutter
Golf Course Worker
Grounds Maintenance Worker
Landscape Labourer
Maintenance Worker, Parks
Sod Layer
Transplanter

Main duties

Landscaping and Grounds Maintenance Labourers perform some or all of the following duties:

- Spread top soil, lay sod, plant flowers, grass, shrubs and trees and perform other duties to assist with the construction of a landscape and related structures
- Cut grass, rake, fertilize and water lawns, weed gardens, prune shrubs and trees and perform other maintenance duties as directed by supervisor
- Operate power mowers, tractors, snowblowers, chainsaws, electric clippers, sod cutters, pruning saws and other landscape maintenance equipment
- Spray and dust trees, shrubs, lawns and gardens, as directed, to control insects and disease
- Perform other manual duties to clean and maintain landscaped environments

Employment requirements

- Some secondary school education may be required.
- A provincial licence to apply chemical fertilizers, fungicides, herbicides and pesticides may be required.

Additional information

- Progression to technical or supervisory occupations in landscaping and horticulture is possible with additional training or experience.

Classified elsewhere

- *Landscape and Horticulture Technicians and Specialists* (2225)
- *Nursery and Greenhouse Workers* (8432)
- *Residential and Commercial Installers and Servicers* (7441)
- *Supervisors, Landscape and Horticulture* (8256)

9213 Supervisors, Food, Beverage and Tobacco Processing

Supervisors in this unit group supervise and co-ordinate the activities of workers who operate processing machines, and package or grade food, beverage and tobacco products. They are employed in fruit and vegetable processing plants, dairies, flour mills, bakeries, sugar refineries, fish plants, meat plants, breweries and other food, beverage and tobacco processing establishments.

Examples of titles classified in this unit group

Foreman/woman, Poultry Graders
Packaging Supervisor
Production Supervisor
Supervisor, Bottling
Supervisor, Fish Processing
Supervisor, Food Product Testers
Supervisor, Meat Packing
Supervisor, Tobacco Processing
Supervisor, Vegetable Packing
Team Supervisor, Flour Milling

Main duties

Supervisors in this unit group perform some or all of the following duties:

- Supervise, co-ordinate and schedule the activities of workers who process, package, test and grade food, beverage and tobacco products
- Establish methods to meet work schedules and co-ordinate work activities with other units
- Resolve work problems and recommend measures to improve productivity and product quality
- Requisition materials and supplies
- Train staff in job duties, safety procedures and company policy
- Recommend personnel actions such as hirings and promotions
- Prepare production and other reports

Employment requirements

- Completion of secondary school is usually required.
- Several years of experience in the food, beverage or tobacco processing industry are required.

Classified elsewhere

- Managers of food, beverage and tobacco processing (in 0911 *Manufacturing Managers*)
- Supervisors of meat and fish inspectors (in 2222 *Agricultural and Fish Products Inspectors*)

9454 Inspectors and Testers, Fabric, Fur and Leather Products Manufacturing

Inspectors and testers in this unit group inspect and grade hides, pelts and leather, or garments and other manufactured fabric, fur and leather products. They are employed by leather tanning and fur dressing establishments or by garment, fu and leather products manufacturers.

Examples of titles classified in this unit group

Clothing Inspector
Cushion and Cover Inspector
Garment Inspector
Fur Grader
Hide Grader

Leather Goods Inspector
Pelt Grader
Seconds Inspector-Grader
Shirt Inspector

Main duties

Inspectors and testers in this unit group perform some or all of the following duties:

- Inspect and grade animal hides, pelts or leather according to size, condition and weight
- Inspect garments and similar products for defects, such as seam splits, puckers, missing buttons and colour and shape variations
- Verify fit or size by placing garment over a form or by measuring products
- Trim excess material and loose threads using scissors
- Remove lint using a brush or lint remover and remove spots using cleaning solution
- Repair minor defects using a needle and thread
- Record information on the number and nature of defects
- Grade and sort finished products and tag according to size, style and quality

Employment requirements

- Some secondary school education may be required.
- Work experience in the manufacturing of the products under examination is usually required.

Additional information

- There is little mobility among the different inspectors and testers in this unit group.

Classified elsewhere

- *Textile Inspectors, Graders and Samplers* (9444)

9461 Process Control and Machine Operators, Food and Beverage Processing

Process control and machine operators in this unit group operate multi-function process control machinery or single function machines to process and package food and beverage products. They are employed in fruit and vegetable processing plants, dairies, flour mills, bakeries, sugar refineries, meat plants, breweries and other food and beverage processing establishments.

Examples of titles classified in this unit group

Bakery Machine Operator
Bottling Machine Operator
Brewer
Canning Machine Operator
Chocolate Refiner
Control-Room Operator, Food and Beverage Processing
Fermenter Operator
Freezer Operator
Fryer Operator
Meat Grinder
Mixer Operator, Dry Foods
Pasteurizer Operator
Sugar Boiler

Main duties

Process control operators in this unit group perform some or all of the following duties:

- Operate multi-function process control machinery through control panels, computer terminals or other control systems to grind, extract, mix, blend, cook or otherwise process food products and to bag, box or otherwise package food products
- Operate multi-function process control machinery to grind, extract, mix, blend, distill, ferment or otherwise process alcoholic or non-alcoholic beverages and to bottle, can or otherwise package beverages
- Observe gauges, computer printouts and video monitors to verify specified processing conditions and make adjustments to process variables such as cooking times, ingredient inputs, flow rates and temperature settings
- Maintain shift log of production and other data

Machine operators in this group perform some or all of the following duties:

- Set up and adjust processing and packaging machines preparatory to operation
- Operate single function machines to grind, extract, mix, blend, freeze, cook or otherwise process food or beverage products and to box, can or otherwise package food or beverage products
- Check products for defects and to ensure conformance to company standards and perform corrective machine adjustments as necessary
- Record production information such as quantity, weight, size, data and type of products packaged

Employment requirements

- Completion of secondary school may be required.
- Experience as a machine operator, food and beverage processing is usually required for process control operators.
- Experience as a labourer, food and beverage processing may be required for machine operators.

Additional information

- There is little mobility among the various types of process control operators within the food and beverage processing industry.
- Process control operators may progress to supervisory positions in food and beverage processing with experience.
- There is mobility among machine operators within the food and beverage processing industry.
- Machine operators may progress to process control operators or supervisors in food and beverage processing with experience.

Classified elsewhere

- *Bakers* (6252)
- *Butchers and Meat Cutters, Retail and Wholesale* (6251)
- *Fish Plant Workers* (9463)
- *Industrial Butchers and Meat Cutters, Poultry Preparers and Related Workers* (9462)
- *Labourers in Fish Processing* (9618)
- *Labourers in Food, Beverage and Tobacco Processing* (9617)
- *Supervisors, Food, Beverage and Tobacco Processing* (9213)

9462 Industrial Butchers and Meat Cutters, Poultry Preparers and Related Workers

Workers in this unit group prepare meat and poultry for further processing, for packaging or for marketing. They are employed in meat and poultry slaughtering, processing and packing establishments.

Examples of titles classified in this unit group

Beef Boner
Ham Cutter
Industrial Butcher
Industrial Meat Cutter
Poultry Preparer
Slaughterer
Meat Trimmer

Main duties

The following is a summary of main duties for some occupations in this unit group:

- Industrial butchers slaughter livestock using stunning devices and knives; remove viscera and other inedible parts from carcasses; split carcasses into smaller portions to facilitate handling; and may slaughter cattle, calves and sheep as prescribed by religious laws.
- Industrial meat cutters cut beef, lamb, pork or veal carcasses or sides or quarters of carcasses into primal cuts for further cutting, processng or packaging; remove bones from meat; and cut meat and poultry into specific cuts for institutional, commercial or other wholesale use.
- Poultry preparers slaughter poultry and remove inedible parts; remove feathers and singe and wash poultry to prepare for further processing or packaging.
- Trimmers remove skin, excess fat, bruises or other blemishes from carcasses or meat portions.

Employment requirements

- Completion of secondary school education may be required.
- For industrial meat cutters, completion of a program in industrial meat cutting
  or
  Experience as a industrial butcher or trimmer is required.
- On-the-job training is usually provided for industrial butchers, poultry preparers and trimmers.

Additional information

- Progression to supervisory positions is possible with experience.
- Industrial meat cutters may progress to inspecting, testing and grading jobs.

Classified elsewhere

- *Butchers and Meat Cutters, Retail and Wholesales* (6251)
- Meat graders (in 9465 *Testers and Graders, Food and Beverage Processing*)
- Meat inspectors (in 2222 *Agricultural and Fish Products Inspectors*)
- Supervisors, meat packing (in 9213 *Supervisors, Food, Beverage and Tobacco Processing*)

9465 Testers and Graders, Food and Beverage Processing

Testers and graders in this unit group test or grade ingredients and finished food, beverage or tobacco products to ensure conformance to company standards. They are employed in fruit and vegetable processing plants, dairies, flour mills, bakeries, sugar refineries, fish plants, meat plants, breweries and other food, beverage and tobacco processing plants.

Examples of titles classified in this unit group

Beef Grader
Beer Tester
Cheese Grader
Fish Grader
Milk Grader
Poultry Grader
Product Tester, Food and Beverage Processing
Tobacco Grader

Main duties

Testers and graders, in this unit group perform some or all of the following duties:

- Take samples of products at various stages of processing
- Examine ingredients or finished products by sight, touch, taste and smell or weigh materials to ensure conformance to company standards
- Conduct routine tests for product specifications such as colour, alcohol content, carbonation, fat content and packaging
- Grade or sort raw materials or finished products
- Advise supervisors of ingredient or product deficiencies

Employment requirements

- Completion of secondary school education may be required.
- Experience as a machine operator or labourer in the food and beverage processing industry may be required.
- On-the-job training is usually provided.

Additional information

- There is little mobility among the various types of testers and graders in this unit group.
- Progression to supervisory positions is possible with experience.

Classified elsewhere

- *Agricultural and Fish Product Inspectors* (2222)
- *Supervisors, Food, Beverage and Tobacco Processing* (9213)
- Quality control technologists and technicians (in 2211 *Applied Chemical Technologists and Technicians*)

9617 Labourers in Food, Beverage and Tobacco Processing

Labourers in this unit group perform material handling, clean-up, packaging and other elemental activities related to foo beverage and tobacco processing. They are employed in fruit and vegetable processing plants, dairies, flour mills, bakeries, sugar refineries, meat plants, breweries and other food, beverage and tobacco processing plants.

Examples of titles classified in this unit group

Bottle Washer
Brewery Worker
Cigarette Packer
Dairy Helper
Food Processing Labourer
Meat Packager
Potato Chip Sorter
Production Helper

Main duties

Labourers in Food, Beverage and Tobacco Processing perform some or all of the following duties:

- Transport raw materials, finished products and packaging materials throughout plant and warehouse manually or with powered equipment
- Measure and dump ingredients into hoppers of mixing and grinding machines or mobile tank trucks
- Feed flattened boxes into forming machines to construct containers
- Remove filled containers from conveyors and manually pack goods into bags, boxes or other containers
- Clean work areas and equipment
- Feed and unload tobacco processing machines
- Check products and packaging for basic quality defects
- Assist process control and machine operators in performing their duties

Employment requirements

- Some secondary school education may be required.

Additional information

- There is some mobility among occupations in this grou
- Labourers in food, beverage and tobacco processing may progress to machine or process operating positions with experience.

Classified elsewhere

- *Labourers in Fish Processing* (9618)
- *Process Control and Machine Operators, Food and Beverage Processing* (9461)
- *Tobacco Processing Machine Operators* (9464)

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